HISTORICAL LAND USE INVENTORIES: A GUIDE FOR ONTARIO MUNICIPALITIES

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Executive Summary

Introduction

Many Ontario municipalities contain formerly industrial and commercial land (so called ‘brownfields’) which is now available for re-use as parkland, residential, green industrial and other land uses. As a result of historical land use practises, soil and groundwater at such sites may be contaminated with hazardous substances—chemicals or materials which have the potential to create an “adverse effect”[1] to the natural environment and human health by migrating off site or through direct human contact. Historical land use inventories can be a significant tool in helping Ontario municipalities identify and catalogue known and potentially contaminated sites and to ensure that land redevelopment safeguards public health and the environment.

Brownfield redevelopment represents a unique confluence of public- and private-sector challenges and opportunities. The Province of Ontario, the Task Force on the Future of the Greater Toronto Area (the Golden Commission) and many Ontario municipalities have identified brownfields as a substantial resource in the municipal land portfolio. Brownfield redevelopment has the potential to stimulate local employment, expand the municipal property tax base, utilise dormant infrastructure and advance provincial and municipal goals to increase the supply of land available for residential intensification in pre-war urban areas.

The private sector also has a demonstrated interest in brownfield redevelopment and is increasingly seeking municipal approvals for the re use of potentially contaminated lands. Ontario’s financial services industry (banks, insurance companies), environmental firms, private sector developers and landowners have identified brownfields as a significant business opportunity.

The opportunities and challenges posed by brownfield redevelopment are attended by a need for timely and accurate identification of sites with known or potential contamination. The research methods and historical land use inventory formats delineated in this guide are designed to equip Ontario municipalities with the tools to respond to the information needs associated with the growing demand for brownfield sites.

This guide also describes the provincial policy context which encourages municipalities to develop historical land use inventories, the municipal benefits of inventory development, indicates how inventories may be used and in what context.

Definition and Types of Historical Land Use Inventories

This guide is designed as a reference for municipalities who wish to create historical land use inventories. For the purposes of this guide, a historical land use inventory is defined as:

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[1] “Adverse effect” is defined in the *Environmental Protection Act* (R.S.O. 1990). The Ministry of Environment and Energy derives its responsibility to “deal with situations where there is an adverse effect, or the likelihood of an adverse effect, associated with the presence or discharge of a contaminant...primarily from administering the *Environmental Protection Act (R.S.O. 1990)* and the *Ontario Water Resources Act (R.S.O. 1990)*.”

a systematic listing of any activity or process which through accidents, spills or material management practises may have deposited substances or chemicals in soil, surface or groundwater which may pose concerns for public health and/or the environment.

Historical land use inventories range from straightforward to complex. Inventories can be simple maps of industrial areas and/or lists of potentially contaminated sites. More comprehensive inventories may require the use of databases while some municipalities may choose to tie a historical land use inventory to a municipal geographic information system (GIS).

The guide describes three types of historical land use inventories by ascending degree of detail, namely:

1. Areas of interest inventory
2. Historical land uses within areas of interest
3. Potential environmental concerns within areas of interest

Each type of inventory is designed to meet a specific set of municipal needs and is comprised of increasingly comprehensive information categories. The guide describes in detail how the various inventories are developed and examples of each are provided in Appendix A. Since user requirements vary widely, an inventory can be designed according to one of the three examples, a combination of the examples or on the basis of a unique set of information categories. Finally, the guide explains how to conduct a pilot study to test inventory design and outlines strategies for estimating the financial and other resources required to develop a historical land use inventory.

The Provincial Policy Context

This guide was prepared in an atmosphere of increasing scrutiny of the quality of the natural and human environment. Governments, landowners and the general public are increasingly alert to the potential impact contaminated soil and groundwater can have on public health and the environment. Provincial policies and guidelines in the areas of public health, environment and housing encourage or require municipalities to develop databases of potentially contaminated areas, especially current and former waste disposal, industrial, certain commercial, and lake- and land-fill sites.

- ◊ In June, 1996, the Ministry of Environment and Energy (MOEE) released its *Guideline for Use at Contaminated Sites in Ontario*[2]. Under the *Guideline* it is increasingly incumbent upon Ontario municipalities to develop the capacity for the timely identification, assessment and review of development applications pertaining to contaminated or potentially contaminated sites and adjacent properties.

Steps in Designing a Historical Land Use Inventory

This guide outlines the key steps required to define the scope of a historical land use inventory. Prior consultation with potential inventory users will help municipalities design an inventory which meets users' needs and may help to secure the financial and other resources required to develop an inventory. The level of detail directly influences the time and other resources required to develop an inventory. Therefore, rather than develop an inventory for an entire municipality, an inventory could focus on geographic areas of particular municipal interest or concern, e.g. former industrial areas facing redevelopment or areas which pose a specific environmental or public health risk. This guide describes areas typically of interest to municipalities and indicates which historical land uses should be flagged for inclusion in a historical land use inventory

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[2] MOEE. *Guideline for Use at Contaminated Sites in Ontario*. Toronto: Queen's Printer for Ontario. June, 1996.

Types and Sources of Information

The guide describes four broad information categories which may be included in a historical land use inventory according to the needs of different users, namely, (1) general land use information, (2) historical land use information, (3) environmental information and (4) other types of information specific to individual municipalities and users.

The guide identifies a wide range of information sources including municipal, provincial, historical, environmental and rural sources. For example, current municipal information sources, including official plans, provide valuable general information which can be used to focus inventory development. Historical sources, such as fire insurance plans and land use atlases, are integral to inventory development and the guide evaluates these sources according to their availability, comprehensiveness, applicability, and ease of use. The guide reviews a number of provincial inventories which catalogue potentially contaminated lands and potentially contaminating historical processes and activities and illustrates their broad applicability in inventory development.

Acknowledgements

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In Ontario, the cities of Toronto, Ottawa, Niagara Falls and the Regional Municipality of Waterloo have developed historical land use inventories. The information and approach elaborated in this guide are largely based on the historical land use inventory developed by the City of Toronto's Department of Public Health, but were also informed by the experienced staff in Ottawa, Niagara Falls and Waterloo.

In addition, municipal and provincial officials participated in focus group meetings held in Toronto and the City of London. The sessions were intended to elicit and incorporate feedback from potential historical land use guide users. The guide was revised and much improved as a result of comments and suggestions made at the focus groups. The authors gratefully acknowledge the contribution of the following individuals who provided information or participated in the workshops:

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1.0 BACKGROUND

Cities and towns in Ontario have experienced many changes in the last forty years, including changes in land use as industries have closed or moved to other locations. Accordingly, formerly industrial land within municipalities is now available for redevelopment as residential, park land, commercial, 'green' industrial and mixed uses.

However, potentially hazardous substances may be present in soil and groundwater on these lands due to past waste management practices, accidental leaks or discharges. Prior to World War II, industrial wastes were sometimes disposed of on site or in nearby water-bodies and may still pose a threat to public health and the environment[3]. Land uses often associated with persistent and toxic chemicals include, but are not limited to, waste disposal, petroleum storage and dispensing, dry cleaning, lake- and land-filling, etc.

For the redevelopment of these lands to proceed in a manner that protects public health and the environment, it is essential to identify potential site contamination due to historical industrial and other potentially polluting activities[4]. This information allows municipalities and developers to anticipate the potential need for site assessment and rehabilitation at the outset of a development proposal. This document provides guidance to Ontario municipalities who wish to develop historical land use inventories to identify potentially contaminated sites.

1.1 Structure of the Guide

This guide is designed to provide municipalities with an understanding of the utility of historical land use information, the components of a historical land use inventory, and the tools to design an inventory to meet the unique needs of individual municipalities. The guide consists of five chapters:

- ◊ Chapter One provides background information on how historical land use inventories can be used, by whom and why.
- ◊ Chapter Two is a summary of the main steps in the development of historical land use inventories.
- ◊ Chapter Three describes the scope of historical land use inventories and outlines the criteria used to identify land use activities.
- ◊ Chapter Four describes three types of inventories and outlines the information categories which may be included in each.
- ◊ Chapter Five reviews valuable forms of information used to create a historical land use inventory, and identifies their sources and limitations.
- ◊ Chapter Six describes inventory maintenance strategies and presents a sample legal disclaimer which guides public use of municipal historical land use inventories.

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[3] C.E. Colten. "Historical Questions in Hazardous Waste Management," in *The Public Historian*, Vol. 10, No. 1 (Winter, 1988), pp. 7-20.

[4] Monica Campbell. "Role of Municipal Government in Site Remediation: City of Toronto as a Case Study," presentation to *Insight Canada Conference on Clean-up of Contaminated Sites: Regulations and State of the Art Technologies*, November 5 and 6, 1991, Toronto.

1.2 Definition and Application

A historical land use inventory is a systematic collection of information on the type and location of historical land uses which may have caused soil or groundwater contamination. Historical land use inventories have a range of municipal applications. One of the main uses is to evaluate development applications for potential environmental concerns. For example, municipal planning departments may cross-reference development proposals to the municipal historical land use inventory in an initial effort to identify potentially contaminated sites as is practised in the City of Toronto. If a site is listed, the municipality may require the applicant to conduct a Phase I Environmental Site Assessment (Phase I ESA) to determine whether any environmental concerns should be addressed in the redevelopment process.

Historical land use inventories can be used for a variety of purposes by other municipal departments and agencies. For example, planning departments may use historical land use inventories to develop policies related to future municipal land use or identify suitable land for residential intensification initiatives—a key component of the Province of Ontario's *Comprehensive Policy Statements* released in March, 1995. Historical land use inventories may help municipal public works departments comply with provincial guidelines and regulations governing the disposal of excess material excavated in the course of road construction, service provision, etc. The information in an inventory may also be relevant to buildings department officials as a preliminary check for probable site contamination before issuing construction or demolition permits, as is currently practised by the City of Niagara Falls. Public health units may use an inventory as one of several information resources to report local environmental risk areas—a requirement of provincial health program and service guidelines (see Section 1.4).

Developers, property owners and their agents may access a historical land use inventory to find out about potentially contaminated land they own or wish to purchase. The private development community is one of the most frequent users of the City of Niagara Falls' historical land use inventory[5]. Members of the public and interest groups may use an inventory to conduct historical research or to assess health or environmental concerns associated with a site.

Most of the information required to develop a historical land use inventory is available from public sources. Nevertheless, a municipality should formulate a policy in consultation with its solicitors to notify inventory users that the presence or absence of a site listing should not be considered to be definitive and proponents should never use inventory listings as a proxy for conducting thorough historical research (see Appendix E, Municipal Disclaimer).

1.3 Benefits of an Inventory

Historical land use inventories have a wide range of potential benefits. Inventories may enhance a municipality's capacity to identify potentially contaminated or hazardous sites and allow for proactive site analysis in advance of redevelopment. While a review of site data contained in a historical land use inventory may be a valuable indicator of the probability of site contamination, it should never be relied on to gauge the extent of contamination or the degree to which a site may have to be remediated, if at all.

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[5] City of Niagara Falls, *Environmental Inventory Status Report*, PD-89-174, Prepared by G. de Boer, submitted to City Council by J.L. Collinson, November 21, 1989.

City of Niagara Falls, *Environmental Inventory Status Report*, PD-91-7, Prepared by Ann Erb, submitted to City Council by E.P. Lustig, January 15, 1991.

Municipal inventories can be used to identify other potential constraints on land redevelopment. For example, land with a demonstrably high potential for soil and groundwater contamination due to past land uses, may not be suitable for immediate residential redevelopment. Moreover, once such a site is identified, it may become part of a municipality's strategy to protect its potable water supply drawn from local groundwater.

Historical land use inventories facilitate the early identification of potentially contaminated sites which, in turn, helps developers anticipate site assessment and clean-up requirements. In some cases, site rehabilitation costs may preclude the reuse of contaminated land in the short term[6]. In other cases, the prior knowledge of potential contamination achieved by developing a historical land use inventory will help to avert potentially costly construction delays and protect the health and safety of workers. There are many examples in the Province of Ontario of construction delays and stoppages caused when work crews encountered unexpected hazards: Excavation for a new civic centre in Waterloo was delayed when crews discovered tanks containing coal tar.[7] Workers preparing a site for a Pickering subdivision complained of skin irritation. All work stopped when investigators found unacceptably high lead concentrations in the soil.[8] Groundwater pumped into the Ottawa River from a transit service excavation left an oily sheen and contaminated river sediment.[9] Table 1 summarises some municipal benefits which may flow from the development of a historical land use inventory.

Table 1: Potential Benefits of a Historical Land Use Inventory
◊ Enhance municipal capacity to quickly assess development applications for potential environmental concerns.
◊ Reduce or eliminate costs and delays associated with unforeseen contaminants or hazards.
◊ Provide information leading to more informed land use planning decisions.
◊ Serve as a reliable information source on possible development constraints for land-owners, purchasers and developers.
◊ Protect the health and safety of construction workers, the public and future site occupants/users.
◊ Enhance soil, groundwater and surface water quality through the timely identification of potentially contaminated sites.

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[6] M.J. Beckett. "Land Contamination," in *Contaminated Land: Problems and Solutions*. Ed: Thomas Cairney. London: Chapman and Hall. 1993.

[7] Paul Eichenger, Projects Engineer, Department of Public Works, City of Waterloo. Personal Communication. June 6, 1994.

[8] R. Waters and J. Fitchko. *Stockpile Removal and Subsequent Cleanup Methodology and Verification for the Industrial Lot (Block 78) in Pickering*. A Final Report Prepared for Fulco Automotive Limited. 1990.

[9] Ontario Ministry of the Environment. *Lees Avenue Hyrdogeologic Study (Draft Report)*. Prepared by Intera Technologies Limited. 1987.

1.4 Policy Context

This guide has been prepared at a time when government agencies, landowners and the general public are increasingly alert to the potential consequences of soil and groundwater contamination. Provincial policies and guidelines encourage or require municipalities to develop historical land use inventories and provide a context for their use. Historical land use inventories may benefit municipalities in their efforts to comply with key provincial policies and guidelines. The three areas of provincial policy which are a direct impetus for the development of municipal historical land use inventories—environment, health, and housing—are briefly reviewed below.

1.4.1 Environment

In 1992, the Ministry of Environment (MOE) published its *Guideline on Planning for the Re-use of Potentially Contaminated Sites*[10] to:

- outline the province's interim position on the re-use of potentially contaminated sites;
- develop a strategy for a review of provincial planning documents; and
- provide strategic direction to municipalities and consultants on the MOE's land use planning requirements.

The guideline clearly states that "municipalities are encouraged to undertake inventories of sites within their jurisdiction, in consultation with the local District Office of the Ministry of Environment, where existing and past uses may have contributed to the presence of contaminants. Identification of sites as potentially contaminated should trigger a municipal request for analysis to determine the nature and extent of contamination when development of these sites is proposed."[11] Consistent with this philosophy and direction, the MOE (and its successor, the Ministry of Environment and Energy) has published provincial inventories of waste disposal sites, coal gasification plant waste sites, industrial sites producing and using coal tar and related tars, and polychlorinated-biphenyl (PCB) waste storage sites.

During preparation of this guide, the reorganised Ministry of Environment and Energy (MOEE) released its successor *Guideline for Use at Contaminated Sites in Ontario* (June, 1996). The *Guideline* traces a host of land use mechanisms which municipalities may employ to ensure that known or potentially contaminated sites within municipal jurisdiction are identified and assessed in a timely manner to safeguard public health and the natural environment. The *Guideline* sets out that

> [m]unicipalities are encouraged to develop and adopt official plans which identify known or suspected areas of soil or groundwater contamination on the land-use schedule or other official plan map, and to develop policies that outline the conditions which must be satisfied before development may proceed in areas where soil or groundwater contamination is known or suspected.

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[10] Ontario Ministry of the Environment. *Guideline on Planning for the Re-use of Potentially Contaminated Sites.* July, 1992.

[11] Ibid., Section 3, *Inventories*

To accomplish these goals, the *Guideline* further recommends that Ontario municipalities develop historical land use inventories of known and potentially contaminated sites to protect public health and the natural environment[12]. Municipal historical land use inventories can be used as a trigger for Phase I Environmental Site Assessments (Phase I ESA) where contamination is known or suspected.

The 1996 *Guideline* continues the provincial trend to devolve responsibility for the identification and rehabilitation of contaminated lands to landowners, environmental consultants and municipalities. In light of this trend, it is increasingly incumbent on Ontario municipalities to develop the tools and capacity required to vet development applications affecting potentially contaminated sites in a timely and effective manner. A historical land use inventory can be a pivotal municipal tool leading to the timely identification and rehabilitation of brownfield sites.

1.4.2 Health

The Premier's Council on Health, Well-Being and Social Justice released the report *Our Environment, Our Health: Healthy Ecosystems, Healthy Communities, Healthy Workplaces* in January 1993[13]. The document recommends that governments, the private sector, communities and individuals become more directly responsible for environmental protection to promote human health. The report establishes a series of objectives to reach the provincial goal of ensuring a safe, high quality physical environment. Under its 'Healthy Ecosystems' objective, the report sets the target for municipalities and others to, "starting immediately, strengthen and accelerate efforts to restore contaminated sites that pose a threat to health". The report proposes that a municipality's first action towards restoring contaminated sites should be to "establish databases on site identification".[14]

Under the authority of the *Health Protection and Promotion Act*, the Ministry of Health has established minimum standards for programs and services delivered by municipal health boards. The *Mandatory Health Programs and Services Guidelines*[15] include a requirement that boards of health produce a report on local environmental risk areas at least once every five years. As a minimum, environmental risk reports must catalogue active and inactive landfill sites, sites known to be contaminated and industries with the potential for major environmental impact. Draft amendments to the *Mandatory Health Programs and Services Guidelines* include an additional requirement that boards of health be informed of sites where soil contamination may present a risk to community health and safety.

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[12] Ministry of Environment and Energy, "Land Use Planning," in *Guideline for Use at Contaminated Sites in Ontario*. Toronto: Queen's Printer for Ontario, 1996, p. 78.

[13] The Premier's Council on Health, Well-Being and Social Justice. *Our Environment, Our Health: Healthy Ecosystems, Healthy Communities, Healthy Workplaces*. Report of the Review Committee on Goal Three. January, 1993.

[14] The Premier's Council on Health, Well-Being and Social Justice

[15] Ontario Ministry of Health. "Healthy Environment Section," *Mandatory Health Programs and Services Guidelines (Draft)*. Memorandum to Medical Officers of Health from Dr. Richard Schabas, Chief Medical Officer of Health, Ontario Ministry of Health, p. 33.

1.4.3 Housing

In 1989, the Ministries of Housing and Municipal Affairs released the joint policy statement *Land Use Planning for Housing*.[16] The policy was designed to ensure that planning processes create a range of housing choices for Ontario residents. In March of 1995, the province included new housing policies in its *Comprehensive Set of Policy Statements*[17] which accompanied *Bill 163*, the *Planning Reform Bill* to strengthen the provisions of *Land Use Planning for Housing Policy Statement*. The housing policies encourage planning authorities to identify opportunities for residential intensification and ensure an adequate supply of land for housing in Ontario. Since the redevelopment of land previously used for other purposes can play an important role in meeting Ontario's housing needs, municipal planning authorities should apprise themselves of the locations of potentially contaminated sites.[18]

Municipalities are not required by statute to investigate or request more information about potentially contaminated sites included in redevelopment applications.[19] Ontario municipalities are, however, required to notify the Ministry of Environment and Energy (MOEE) about development applications involving official plan amendments. Even in the absence of formal requirements, municipalities such as the City of Ottawa and the City of Toronto have instituted procedures to investigate redevelopment proposals and each has developed a historical land use inventory[20].

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[16] Ontario Ministry of Housing and Ministry of Municipal Affairs. *Policy Statement: Land Use Planning for Housing*. A statement of Ontario government policy issued under the authority of Section 3 of the *Planning Act (RSO 1983)*. July, 1989.

[17] Ontario Ministry of Municipal Affairs. *Comprehensive Set of Policy Statements*. May, 1994.

[18] Kozman, *Personal Communication (October 24, 1994)*.

[19] City of Niagara Falls, *Environmental Inventory Status Report (1989)*
Region of Hamilton-Wentworth, *Contaminated Sites* (PLA-91-030). Report to Economic Development and Planning Committee from Commissioner of Planning and Development. May 16, 1991.

[20] Region of Hamilton-Wentworth, *Contaminated Sites*.

2.0 Summary of Main Steps in Historical Land Use Inventory Development

The diverse economic and industrial history of Ontario municipalities is reflected in the historical sources cited in this guide. Historical records which document the locations and types of potentially contaminating industrial activities vary widely across the province and through time. Accordingly, the methodology used to develop a historical land use inventory must be flexible and adaptive. Table 2 outlines the main steps used to develop a historical land use inventory.

Table 2: Main Steps in Historical Land Use Inventory Development

1. Define Inventory Scope

- Participants
- Objectives
- Level of Detail
- Geographic Area
- Identify Land Use Activities

2. Select Inventory Design and Format

- Inventory Type
- Format Options: Map, List, Database, GIS
- Pilot Study

3. Collect Information

Information Categories

- General Land Use
- Historical Land Use
- Environmental
- Other

Information Sources

- Municipal
- Provincial
- Historical
- Environmental
- Rural
- Other

4. Operate and Maintain the Inventory

3.0 STEP ONE: DEFINE THE SCOPE

An important first step in planning and designing an inventory to meet municipal needs is to define its scope. Factors to consider include:

- ◊ inventory development team
- ◊ objectives
- ◊ level of detail
- ◊ geographic area
- ◊ land use (e.g. industrial, commercial)

These factors will determine the final design of the inventory and are discussed in detail in this chapter. Chapter 3 describes three inventory design options that range from basic to complex inventories. Final inventory designs may include any number or combination of information categories outlined in Chapter Five. Municipalities considering inventory development should undertake a pilot study to test inventory design and to estimate the financial and other resources required to complete the project.

The following table lists a series of questions which can be used to determine the scope and scale of a historical land use inventory.

Table 3: Questions to Help Define the Scope of an Inventory
◊ Is there demand for the redevelopment of potentially contaminated areas in the municipality?
◊ Which areas of the municipality are of primary interest or concern? Areas of planned or probable housing redevelopment? Potentially contaminated sites adjoining environmentally sensitive natural areas?
◊ What are the requirements of the various municipal departments that will use the inventory?
◊ Who should be involved in formulating the inventory and what are the stakeholder requirements?
◊ What financial, personnel and other resources are available to develop the inventory?
◊ How much historical detail is required? Is the size and extent of the geographic area sufficiently concise to be represented in a simplified map format or larger and more complex requiring database management?
◊ Is municipal computer expertise available to create and maintain a relational database? A Geographic Information System (GIS)? Does the municipality have plans to implement GIS?

3.1 Inventory Development Team

The information contained in a historical land use inventory can be used by a variety of municipal departments and agencies. Early consultation with potential users will help to ensure the inventory is a valuable and responsive municipal asset. An effective consultation strategy may also mobilise the staff and financial commitments required to develop an inventory. Inventory developers should establish a working group comprised of future inventory users from relevant municipal departments.

3.2 Objectives

The scope and content of a historical land use inventory will reflect the needs of the departments and agencies who will use it. For example, planning departments may use an inventory to assess development applications for potential soil and groundwater contamination. Another objective may be to identify areas which could be ill-suited for housing development and other sensitive land uses. Public health departments may use an inventory to identify areas of potential soil and groundwater contamination in its ongoing efforts to protect public health. Methodical advance identification of user objectives helps to shape the content, level of detail, structure and format of an inventory. A summary of potential objectives which may be met by developing a historical land use inventory appears in Table 4.

Table 4: Potential Objectives of a Historical Land Use Inventory
◊ Identify sites which may be contaminated from past land uses.
◊ Identify potential types of site contaminants.
◊ Identify potential sources of groundwater contamination.
◊ Recommend that development applicants undertake further historical investigation or conduct soil or groundwater tests.

3.3 Level of Detail

Municipal objectives determine the range and depth of information which will be contained in an inventory. The amount of time and other resources required to develop a historical land use inventory are directly related to municipal information requirements and will determine the format of the inventory. Four inventory formats—ranging in ascending order of complexity: annotated maps, lists, relational databases, and municipal geographic information systems (GISs)—are explained in Chapter 4. (Even if municipal requirements change over time, the information contained in less comprehensive inventories becomes a valuable component of successively more comprehensive inventories.) Chapter 4 provides initial guidance to help inventory developers select the format best suited to municipal needs and resources.

3.4 Geographic Area

Rather than prepare a historical land use inventory for an entire municipality, this guide recommends that an inventory focus on a geographic area(s) of special interest or concern to the municipality. The geographic scope of an inventory will largely depend on the industrial and economic history of each municipality. Types of areas which should be considered for inclusion in a historical land use inventory are:

- ◊ transitional areas undergoing redevelopment pressures;
- ◊ industrially zoned areas;
- ◊ areas of aerial deposition (areas where contaminants are deposited by the atmosphere, e.g. lead reduction zones in the City of Toronto, transportation corridors, etc.);
- ◊ lakefill and landfill sites;
- ◊ abandoned waste disposal sites; and
- ◊ potentially contaminating services including gasoline service stations, automotive repair shops, dry cleaners, etc.

Areas formerly or currently zoned for industrial use, certain commercial uses and waste disposal sites should be included in an inventory because these types of activities may have adverse effects on soil and groundwater quality.

Contaminants may migrate through groundwater or atmospheric deposition and affect lands which would not otherwise appear to pose an immediate concern. In some cases, contaminants may migrate from one municipality to another through aerial deposition or migrate through groundwater. For example, residential properties in the City of Toronto's South Riverdale neighbourhood were contaminated through atmospheric deposition of lead from a nearby battery recycling facility. Contaminated sites were eventually the subject of a comprehensive municipal soil rehabilitation/replacement project. Likewise, lakefill and landfill sites should be included in an inventory because of potential fill toxicity.

The location and extent of geographic areas to be included in an inventory will largely relate to the industrial and commercial history of a municipality. In many Ontario towns and cities, industrial activity typically occurred along transportation routes such as railway corridors, lakes and rivers. Key information sources used to develop a historical land use inventory include industrial zoning maps contained in historical official plans, historical maps and records such as fire insurance plans, aerial photographs, assessment rolls and other information available from municipal archives.

3.5 Identification of Land Use

Each municipality will identify and include land uses specific to its region. For example, northern Ontario municipalities will tend to focus on land uses related to primary resource extraction industries (e.g. mining, pulp and paper). Southern Ontario municipalities, on the other hand, will focus on secondary and tertiary industries (e.g. manufacturing, refining, processing and service industries). Still others have remained largely rural, with agriculture at the centre of the local economy.

Table 6: Examples of Potentially Contaminating Activities

1. Asbestos works;
2. Chemical works;
3. Docks and railway lands, especially large sidings and depots;
4. Gasworks, other coal carbonisation plants and ancillary by-products works;
5. Landfills and other waste disposal sites;
6. Metal mines, smelters, foundries, iron and steel works, metal finishing;
7. Oil refineries, petroleum storage and distribution sites;
8. Plants and heavy engineering installations, e.g. ship-building and ship-breaking;
9. Installations involving the processing of radioactive materials;
10. Scrap yards;
11. Sewage works and farms;
12. Tanneries; and
13. Industries making or using wood preservatives.[21]

Industrial and other land uses with the potential to contaminate soil or groundwater are listed in a variety of sources. A general and abbreviated list appears in Table 5. The remainder of this Chapter provides further guidance on selecting the types of activities that should be included in a historical land use inventory and identifies valuable data sources.

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[21] British Standards Institution, *Code of Practice for the Identification of Potentially Contaminated Land and Its Investigation.* (DD-175). 1988.

3.5.1 Activities Using Toxic Substances

For the purposes of this guide, land use activities which should be considered for inclusion in a historical land use inventory are:

> *any activity, procedure or process that uses substances or chemicals which through accidents, spills or management practices may be present in soil, surface- or ground-water and may be of concern to public health and/or the environment.*

The types of contaminants or hazards which may be present on a site largely depends on its former land uses. Records often show some sites have been subject to a variety of industrial uses, each of which has a different hazard profile. From time to time, contaminants and hazards are present on a site in the absence of records indicating potentially contaminating historical activity (e.g. unauthorised disposal of hazardous waste from other sites, contaminant migration from adjacent sites through groundwater or aerial deposition)[22].

Historical industrial processes which used toxic organic chemicals, toxic metals, radioactive material or other persistent toxins may pose a risk to human health and the environment. Humans may come into contact with toxins which do not readily degrade and may persist in the natural or built environment for long periods. Certain compounds are known to migrate through layers of soil and be carried off site through groundwater.

For example, chlorinated solvents can persist in the environment and present a risk to human health and the environment. Many post World War II industrial activities used chlorinated solvents for dry cleaning, wood preservation, microelectronics manufacturing, automotive production and repair, asphalt operations, aviation equipment maintenance, and the manufacture of munitions[23]. (Sources which list chemicals associated with various land uses are provided at the end of this chapter.)

3.5.2 Other Land Uses

In some cases, it may be unclear whether an industry actually employed persistent or toxic substances and, therefore, whether the site should be included in a historical land use inventory. This guide recommends that such sites should be included in an inventory because some activities which do not use toxic substances may pose other hazards. For example, in the course of preparing the City of Niagara Falls' *Environmental Inventory*[24], officials were undecided whether to include fruit and vegetable canneries in the historical land use section. In discussions with a city building inspector, officials learned that a small explosion had occurred during the redevelopment of a cannery when an excavator uncovered an earthen pit used to dispose of fruit pits and other organic matter. The decomposing organic matter had produced methane gas which was ignited from sparks caused when the excavator shovel struck a rock. The presence of a potential explosion hazard was considered sufficient reason to include canneries in the inventory.[25]

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[22] M.J. Beckett, "Land Contamination," in *Contaminated Land: Problems and Solutions*, p. 11.

[23] J. Cherry, "Groundwater Occurrence and Contamination in Canada," in *Canadian Aquatic Resources*, (Eds.: M.C. Healy and R.R. Wallace.) Canadian Bulletin of Fisheries and Aquatic Sciences, 215. 1987.

[24] City of Niagara Falls, *Environmental Inventory*.

[25] Ann Erb, Niagara Escarpment Commission, Personal Communication, October 19, 1993.

3.5.3 Sources of Information on Chemicals Associated with Industrial Land Use

In some cases it is useful to know the types of contaminants associated with a particular type of land use. This information can be used to determine whether an activity should be included in a historical land use inventory or to focus a site investigation. The City of Toronto, Department of Public Health's *Historical Land Use Database* is linked to a *Chemical Substance List* which lists chemicals associated with certain land use activities. The *Chemical Substance List* allows Public Health staff to anticipate contaminants which may be present on a site due to a particular land use activity.

The following sources list chemicals used in different types of activities. Since industrial activities and processes vary over time and place, not all chemicals will necessarily have been used at every site. The following sources catalogue the range of chemicals which may have been used at industrial sites.

Chris L. Shineldecker, *Handbook of Environmental Contaminants: A Guide for Site Assessment*, Chelsea, Michigan: Lewis Publishers. 1992.

This monograph lists chemicals which are historically associated with or indicators of over 900 activities, facilities, processes and products. The information is categorised by industrial activity. The *Handbook* does not provide information on the potential toxicity or persistence of chemicals.

Historical Hazardous Substance Data Base (Version 2.0)
Illinois State Museum
Geography Program
1920 South 10 1/2 Street
Springfield, Illinois
62703
USA

The *Historical Hazardous Substances Database* lists pre-1950 US industries and lists the hazardous substances they may have used. The information is organised by US Standard Industrial Classification (SIC) codes. (SIC codes are explained in detail in Section 5.1.2 of this guide.) US SIC codes are similar to the Canadian Standard Industrial Classification system.

4.0 STEP TWO: SELECT INVENTORY DESIGN AND FORMAT

4.1 Inventory Type

This section describes three types of inventories based on various municipal information requirements and levels of detail—namely an 'area of interest' inventory, a 'historical land use inventory', and a 'potential environmental concern' inventory. Individual municipalities may develop inventories with varying levels of detail. Municipalities with limited resources may only choose to use an inventory as a basic screening tool to identify potentially contaminated sites. In such a case, an *'area of interest'* inventory may meet municipal needs. Another municipality may require more detailed information about historical land use at a given location. In this situation, the *'historical land use'* inventory may be most useful. Another municipality may develop a *'potential environmental concern'* inventory to help protect environmentally sensitive resources such as wetlands or surface and ground water. Finally, an inventory may include a combination of each type or unique information categories related to user requirements. Each of the three types of inventories is described below.

4.1.1 Area of Interest

An area of interest inventory contains the least detail and requires the fewest resources to prepare. This type of inventory locates and describes areas of municipal interest, e.g. industrially zoned land, lakefill or landfill sites, waste disposal sites, and other sites currently or historically occupied by potentially contaminating activities. A sample map showing historical industrial zones in the City of Toronto (1949) is provided in Figure 1. Area of interest inventories are well suited to the use of maps and simple lists.

4.1.2 Historical Land Use within Areas of Interest

A more detailed inventory provides historical land use information for individual sites within an area of interest. An example of this type of inventory appears as Appendix A and a sample excerpt is shown in Figure 2. Inventory developers should use a relational database (D-base, FoxPro, Lotus Notes, etc.) to compile and manage this form of inventory due to the potential volume and complexity of information categories and the sheer number of sites.

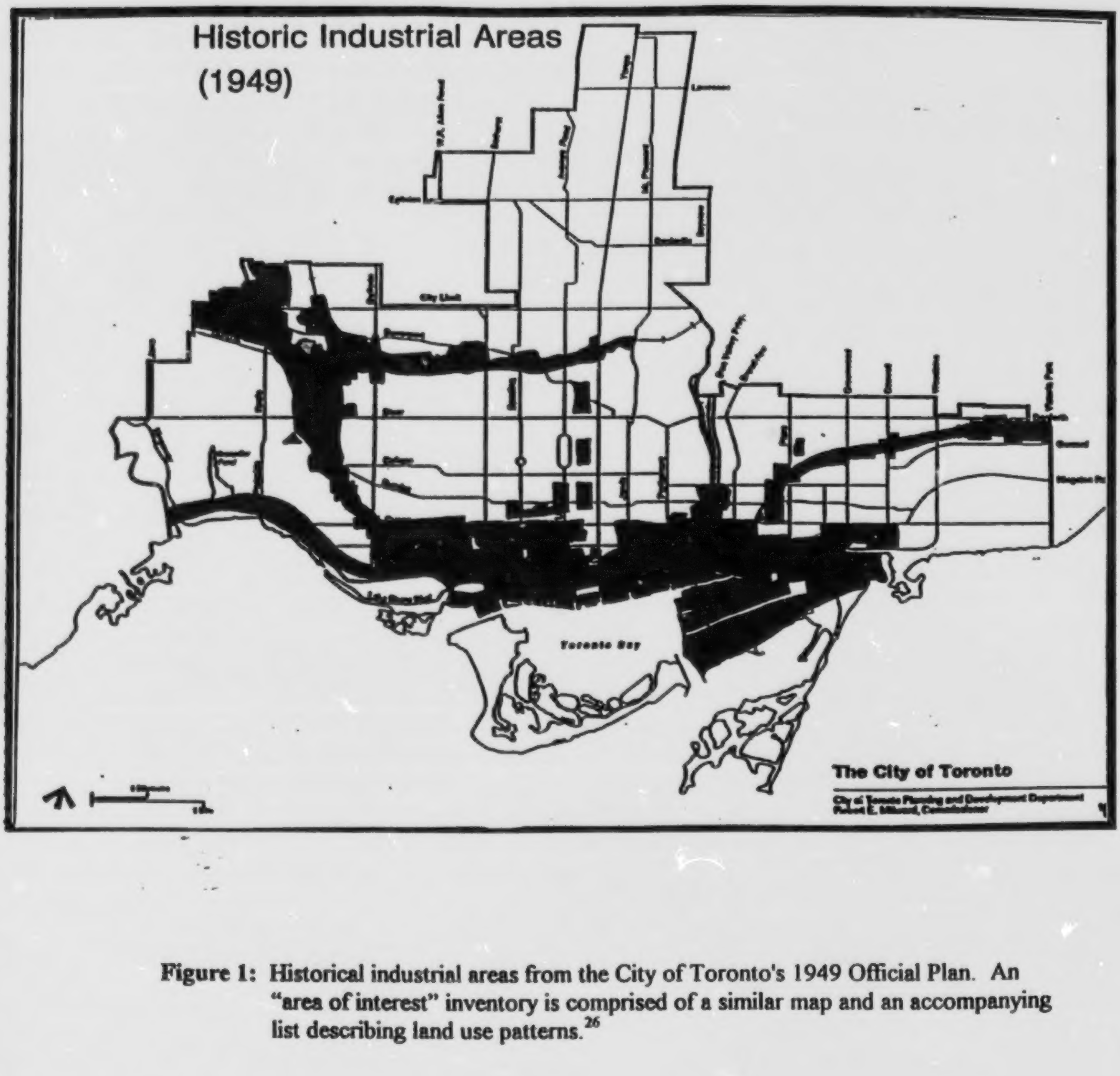
Historic Industrial Areas
(1949)
City Limit
Toronto Bay
The City of Toronto

Figure 1: Historical industrial areas from the City of Toronto's 1949 Official Plan. An "area of interest" inventory is comprised of a similar map and an accompanying list describing land use patterns.[26]

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[26] Monica Campbell, *Role of Municipal Government in Site Remediation: City of Toronto as a Case Study.*

Street Number	Street Name	Years	Company Name	Activity	SIC Code
434	Cherry		Leaside Metal Co.	Other Waste Materials	5919
345	Front E.	1955-1965	Gasol Service Station	Gasoline Service Station	6331
		1917	Dwellings		
373	Front E.	1955-1965	Drummond and McCall Co. Ltd.	Iron and Steel Storage Shed	4799
		1917	Drummond and McCall Co. Ltd.	Iron and Steel Storage Shed	4799
393	Front E.	1955-1965	Hydro-Electric Transformer Station		
		1917	Hydro-Electric Transformer Station		

Figure 2: An excerpt from the 'historical land use' inventory shown in Appendix A. This format is well-suited to managing the information contained in a detailed historical land use inventory

4.1.3 Potential Environmental Concerns Within Areas of Interest

The third type of inventory includes environmental information in addition to land use information. This type of inventory can help a municipality establish site remediation priorities or develop strategies for the protection of groundwater and other resources. Moreover, this type of inventory can help municipalities make informed estimates of the probable effects of potentially contaminated sites. Potential environmental concerns are assessed by identifying the types of toxic chemicals associated with historical industries, the proximity of sensitive receptors (people, plants and wildlife) to a potentially contaminated site and the proximity of a site to exposure pathways such as groundwater recharge areas. The Region of Waterloo used its detailed inventory to identify potentially contaminated sites within well-head protection areas and significantly enhanced the municipality's groundwater protection strategy[27]. This type of inventory is most effectively managed with a computer database or a municipal geographic information system.

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[27] Regional Municipality of Waterloo, *Water Resources Protection Strategy Implementation Plan*, (Memo ER-94-001 to Chair Fred Kent and Members of the Regional Engineering Committee. February 2, 1994.

4.2 Formats

The information collected for a historical land use inventory should be stored in an accessible and convenient manner. Four formats are described below in order of increasing complexity. Each format can serve as a precursor to the next, more complex format.

4.2.1 Maps

A map is a simple and effective format for representing the distribution and extent of potentially contaminated sites within a municipality. A series of historical land use maps should be prepared with each depicting a particular activity or land use. An example of a historical land use map appears as Figure 1.

The scale and format of base maps is important. The scale should be large enough to show important detail but small enough to show the subject area on a manageable number of maps. From the outset, inventory developers should ensure that maps are of a scale and format to allow for updating as more information becomes available or land uses change.

4.2.2 Lists

Lists and tables can accommodate more detailed information than maps and can be used in conjunction with maps. The simplest inventory lists include site addresses and land use information organised alphabetically by street name and numerically by street number. Shorter, less complicated lists can be developed and maintained with off the shelf word processing software. Longer, more complicated lists require computerised databases. Inventory users may conduct a property search either electronically or manually by searching through a hard copy of the file.

4.2.3 Database Management Systems

A database management system is essentially a hard copy list or table stored electronically. Off the shelf relational databases (e.g. dBase, FoxPro, Paradox, etc.) can effectively manipulate inventory records (i.e., quickly search and find a specific address). A historical land use database can be linked to other databases through the use of Standard Industrial Classification (SIC) or other codes (see Section 4.2.1). Moreover, a database inventory can be transferred to other database systems (e.g. Oracle, Sybase) for more sophisticated uses. While specialised expertise is required to create and maintain sophisticated databases, less sophisticated inventory users can manually search a printed database record.

4.2.4 Geographic Information Systems (GISs)

A geographic information system (GIS) is a computer program comprised of digitised maps. Maps can be developed to indicate buildings and sites and cross-reference the information to indicate the dates of operation, scale and nature of potentially contaminating activities, bibliographical references, etc. The great advantage of a GIS is its ability to correlate different types of data. However, specialised expertise is required to operate a GIS and may require a significant commitment of financial and other municipal resources to input and maintain the information.

4.3 Pilot Study

Municipalities should undertake a pilot study by producing an inventory for a portion of the proposed study area in advance of a larger project. A pilot study can be used to:

- ◊ identify priority sites and zones;
- ◊ test the availability and applicability of information sources;
- ◊ test the effectiveness of the historical land use inventory format; and
- ◊ estimate the resources required to complete the inventory.

A pilot study will indicate whether the available information sources provide the required information. Information for some inventory categories may not be available or may be difficult to find. In the absence of certain information, the scope or content of the inventory may have to be revised.[28]

A pilot study can also be used to determine whether the form and content of an inventory meet municipal objectives—if not, the inventory can be modified before the municipality commits significant resources. A municipality can extrapolate the amount of time, financial and personnel resources required to complete an inventory from a pilot project. Those municipalities that have developed historical land use inventories do not have data on the total costs of the undertaking.. However, the resources required to complete the inventory will depend on:

- ◊ the scope and format of the inventory;
- ◊ the availability of information sources; and
- ◊ the quantity and age of industrial or commercial development in the municipality.

Municipal priority areas will be defined by factors such as current and historical land use, development pressures or environmental concerns. A pilot study can be used to provide information on areas of highest priority in advance of a larger undertaking.

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[28] J. Campbell, *Inventory of Contaminated Sites: Status Report (Memorandum)*. Environmental Protection Office, Department of Public Health, City of Toronto. June 4, 1987.
J. Campbell, *Land Use Impact on Soil Quality: Status Report and Management Plan (Memorandum)*. Environmental Protection Office, Department of Public Health, City of Toronto. November, 1987.

5.0 STEP THREE: COLLECT INFORMATION

5.1 Information Categories

This section describes the information categories that can be incorporated into the three inventories defined in Chapter 3. A municipality may select from among the following four categories to construct an inventory:

- ◊ general land use information;
- ◊ historical land use information;
- ◊ environmental information; and
- ◊ other types of information.

Table 6 (see following page) outlines the required and recommended information categories which a municipality can incorporate into each of three inventory types. Table 8 (see section 4.2.1) cross indexes these four categories with their sources.

5.1.1 General Land Use Information

General land use information can be incorporated into either map or list inventory formats. The general land use information group enhances municipal capacity to assess development applications and locate sites and areas which have been occupied by potentially contaminating activities.

General Land Uses and Activities

At a minimum, municipalities should consider including the following general land uses and activities in a historical land use inventory:

- ◊ areas currently and historically zoned for industrial use;
- ◊ areas potentially contaminated by atmospheric deposition of toxins (e.g., lands adjacent to lead refineries, transportation corridors, etc.);
- ◊ areas affected by migration of contaminated groundwater;
- ◊ areas created by lakefill or landfill (e.g. old shorelines, former ravines);
- ◊ active and abandoned mines, smelters and waste disposal sites;
- ◊ areas currently and historically zoned for commercial use (e.g., gasoline stations, automotive repair shops, dry cleaners); and
- ◊ storage facilities (e.g. salt, other products/chemicals).

Whether maps can show information about individual properties is related to the scale of the map. As an adjunct, general land use information directly related to the mapped area can be recorded in a hard copy list or electronic database organised by municipal address (see next subsection).

Table 6: Three Examples of Historical Land Use Inventories and Information Categories That Can be Included

INVENTORY TYPE / INFO CATEGORY	AREAS OF INTEREST	HISTORICAL LAND USE	AREAS OF ENVIRONMENTAL CONCERN
General Land Use			
General land uses and activities	●	●	●
Map identification and location	○	○	○
Address	●	●	●
Historical Land Use			
Company Name		●	○
Types of activity		●	○
Date and duration of activity		●	○
Present land use		○	○
SIC code		○	○
Past development applications		○	○
Environmental			
Potential hazards			●
Product(s)			●
Scale			●
Environmental features			●
Potential environmental concern rating			●
Other			
References	○	●	●
Historical significance	○	○	○

● Required Information Category ○ Suggested Information Category

Address

Street names and numbers are a simple and effective method of recording site information for individual properties. Since street names and numbers may have changed over time, current addresses should be used as the most effective benchmark for site identification. Historical information from municipal archives and public works or planning departments can be useful to convert old street names and numbers to current addresses. If a building or site incorporates a range of street addresses (e.g. 112, 114, 116, 118 & 120), an inventory need only indicate the range (i.e. 112-120) to simplify the list or save computer memory.

Consistent address listing conventions should be adopted prior to developing an inventory. For example, a street with a directional suffix like north or east should be recorded the same way every time (i.e. Main St. N. or Main St. North). Consistent formatting is *essential* if an inventory is developed on an electronic database. Inconsistent listing conventions will cause sites to appear out of order when the database is electronically sorted. Moreover, address extensions (e.g. 1 Saint Patrick Street at north-west corner of Queen Street West) should never vary.

Map Identification and Location

It is also useful to key site street addresses to municipal property database maps (by lot and plan number), Ontario base maps, etc. By cross-referencing sites, inventory users can easily access other potentially important information contained on the maps. Locations can be further specified by using Universal Transverse Mercator (UTM) co-ordinates. UTM co-ordinates are similar to latitude and longitude except the unit of measurement is metres instead of degrees. The central or corner co-ordinates of each site could be entered into the inventory to make it possible to locate a site on a map. UTM co-ordinates are more accurate than street addresses and facilitates the transfer of information into a geographic information system format[29].

5.1.2 Historical Land Use Information

Each property has a unique land use history. Different activities will have occurred at different times in the history of the property. The following information is useful in recording historical land use information.

Company Name

The name of the company or companies that occupied the site should be recorded. If several companies were engaged in the same activity at the same site, it may not be necessary to list each company individually.

Type of Activity

The type of activity performed by each company at a site is one of the most important pieces of historical information because it can be linked to processes which could have resulted in environmental contamination. Examples of potentially contaminating industrial activities include fuel storage and processing, coal gasification and paint manufacturing. Examples of potentially contaminating non-industrial activities include dry-cleaning and gasoline dispensing.

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[29] Hugh Simpson, Regional Municipality of Waterloo, *Personal Communication*. August 16, 1994.

Consistent conventions for listing types of activity must be adopted prior to developing an inventory, especially if the inventory will be developed on an electronic database. For example, if 'gasoline station' were variously listed as 'gas station', 'service station' or 'gasoline service station', an electronic search for 'gasoline station' would not locate the other entries. A reliable listing technique is to follow the nomenclature laid out in the Standard Industrial Classification (SIC) code system (see subsection 4.2.1.).

Date and Duration of Activity

The time period during which a specific land use activity occurred is a useful indicator of potential environmental contamination. The dates of activity can help a municipality determine waste management practises and which industrial processes or chemicals may have been used at a site. For example, pre World War II industries are generally less likely to have made widespread use of synthetic chemicals. Working from the assumption that the longer a potentially contaminating process operates, the greater the probability of accidental spills, it is important to list the years a business was in operation.

Present Land Use

Present land use describes the activity presently being conducted on a site. Present land use can be recorded as part of a historical land use record, but should be recorded in a separate database column to ease access and searches. Separate columns for present and historical land uses, for example, would allow planners to search for presently vacant lands which were historically used for relatively low impact activities, such as beverage or food industries—a valuable tool when looking for vacant lots suitable for sensitive uses such as housing. More generally, separate columns allow planners or buildings department officials to check the compatibility of present land uses against historical land uses.

Standard Industrial Classification (SIC) Codes

By incorporating SIC codes into a database management system it is possible to search for and retrieve information on general or specific activities within a municipality. For example, a general search could be conducted for all chemical products industries, or a more specific search could be conducted for mixed fertiliser industries, paint and varnish industries, or industrial chemicals industries.

Statistics Canada uses a Standard Industrial Classification (SIC) system based on Divisions, Major Groups, Groups and Classes to differentiate types of industrial, commercial and governmental activities and to compile econometric and other data. SIC codes lengthen as classifications become more specific, thus the four designations in ascending order of detail are: Divisions are designated by a capital letter (e.g. 'E' for Manufacturing), Major Groups by a two digit code (e.g. '22'), Groups by a three digit code (e.g. '333') and Classes by a four digit code (e.g. '4444') (see Table 7).

SIC codes are significant tools used in tracing the potentially contaminating effects of various industrial and commercial processes:

> The date of an industrial activity provides clues to the contaminants that may be encountered at a site. In particular, many industrial processes and the chemicals used were either modified or created through the technological and industrial expansion following World War II. For

example, virtually all processes requiring machinery degreasing were modified in the post war years by the use of chlorinated solvents.[30]

Indeed, due to this shift, the City of Toronto's Environmental Protection Office categorises industrial processes as either 'early' (pre-1945) or 'modern' processes that developed in the post-war period.

Table 7: Sample Standard Industrial Classification (SIC) Codes

Classification	SIC Code	Activity
Division	E	Manufacturing Industries
Major Group	37	Chemical and Chemical Products Industries
Group	372	Agricultural Chemical Industries
Classes	3721 3722 3729	Chemical Fertiliser and Fertiliser Materials Industry Mixed Fertiliser Industry Other Agricultural Chemical Industries

SIC codes can also be used to link a historical land use inventory database to other types of databases. For example, the City of Toronto Department of Public Health has compiled a *Chemical Substance List* which is linked to its historical land use database through SIC codes. The *Chemical Substance List* catalogues chemicals which may have been used by industries in certain SIC categories and helps the Department of Public Health anticipate the types of contaminants which might be present at a site due to historical activities. This hybrid information can be used to design soil and groundwater sampling programs and to assess the environmental condition of a site.

Past Development Applications

Since a historical land use inventory can be used to assess redevelopment applications, a municipality may wish to include previous development applications in the inventory. Inclusion is especially useful if a site assessment was performed in support of a previous application.

5.1.3 Environmental Information

In addition to general and historical land use information, municipalities should, wherever possible, include environmental information in the inventory. The five broad classes of environmental information that could be included in an inventory are described below.

Potential Hazards

Current and historical information sources (e.g. company records and fire insurance plans) indicate potential hazards such as underground storage tanks and waste pits. Sources which identify buried hazards should be recorded during the information collection stage and considered for inclusion in the inventory. Inventory developers may suspect other potential sub-surface hazards because of experience with similar land uses. For example, methane gas is commonly associated with landfill sites and other types of organic waste disposal.

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[30] Monica Campbell. *Role of Municipal Government in Site Remediation: City of Toronto as a Case Study*, p. 11.

Products

Information on the types of products produced by an industrial activity, particularly in the manufacturing sector, is often, but not always, available from sources such as the *Canadian Trade Index* and *Scott's Industrial Directories* (see section 4.2.3, p. 39 for more information on directories) and can be used to identify potential environmental concerns on a site[31].

Scale

In addition to duration and date, the scale or size of an activity or operation may indicate potential environmental impacts. For example, large operations are likely to have handled a greater quantity and a wider array of potential contaminants. While annual production figures can provide a meaningful measure of the scale of an operation this information is not always available. A more readily available indicator is the total staff employed at an industrial operation[32].

Environmental Features

Environmental features are physical site characteristics that may be relevant to an environmental site assessment or to evaluating potential environmental concerns. Most of this information is readily obtained from existing maps. Physical characteristics include:

- ◊ general geology such as sand, clay, silt or fill, depth to water table, depth to bedrock;
- ◊ proximity to watercourses such as lakes, rivers, streams;
- ◊ proximity to environmentally sensitive areas such as wetlands, bird sanctuaries, fish habitat;
- ◊ proximity to residential areas; and
- ◊ proximity to water supply areas such as well-head protection areas, groundwater recharge areas, and surface water intakes[33].

Potential Environmental Concern Rating

An assessment of potential environmental concern can be developed to classify individual sites. This information may be used to group and prioritise potentially contaminated sites. An assessment can be based on a number of factors including the potential presence of on site contaminants, the potential for contaminants to migrate off site, or the potential for sites to present a risk to human health or the environment. To rank sites according to their potential risk to human health requires soil and groundwater analysis and the identification of exposure pathways.

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[31] Intera Technologies Limited, *Mapping and Assessment of Former Industrial Sites (Vols. I & II)*, Report Prepared for the City of Ottawa.

[32] G. Mulamoottil and C. Mason, *Historical Land Use in Kitchener-Waterloo*. Report Submitted to the Regional Municipality of Waterloo. July, 1993.

[33] Hugh Simpson, Regional Municipality of Waterloo, *Personal Communication*, August 16, 1994.

The City of Ottawa's historical land use inventory includes an assessment of the potential environmental risk posed by former industrial sites[34]. The assessment was based on a review of industrial materials and processes contained in historical records and a site visit. Sites were categorised into a high, medium, or low priority groups according to the relative probability they contained contaminated soil.

5.1.4 Other Information

Examples of other types of information that may be included in a historical land use inventory are provided below.

References

Inventory developers should maintain a detailed list of sources so interested users can independently conduct more in depth analyses. Rather than repeat full citations, sources can be keyed to a simple letter or number code and entered into an electronic database.

Historical Significance

By including information about the historical significance of a site or building in a historical land use inventory, a municipality may find it can more efficiently flag sites or screen development applications.

5.2 Information Sources

Information sources used to develop a historical land use inventory are drawn from municipal, provincial, historical, environmental and rural sources. A general land use inventory can be constructed almost exclusively from municipal sources; more detailed historical and environmental inventories information require access to other sources. Some sources of historical information such as fire insurance plans are often more accessible and provide more relevant information than sources such as municipal assessment roles. Accordingly, inventory developers should familiarise themselves with the available range of information sources before making a decision to use a particular source. Table 8 illustrates the relationship between sources of information and the information groups discussed in section 4.1. Table 8 can be used in conjunction with Table 6, which includes the three inventory types.

In addition to the sources described below, important information can be obtained from site visits and interviews with people familiar with the sites. Site visits provide an opportunity to verify information collected from other sources and to obtain information based on site features. Former plant workers and site neighbours may have information about a site which is unavailable from records or archives.

Sources of information and their locations are summarised in Table 9 at the end of this chapter.

5.2.1 Municipal Sources

Municipal information sources are a good starting point because they provide valuable general information which can be used to focus future research. For example, industrial areas shown on municipal official plans can be used to define the boundaries of areas that will be investigated in detail.

Official Plans

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[34] Intera Technologies Limited, *Mapping and Assessment of Former Industrial Sites (Vols. I & II)*. 1988.

Current and historical official plans can be used to determine the location of historical industrial areas. If copies of former official plans are not available from municipal archives or libraries, they are often available at university map libraries. If, however, historical official plans are not available, zoning and other by-laws passed by council may indicate industrial areas or other areas of interest[35].

Assessment Rolls

Municipal assessment rolls include information on the nature and location of industrial activity. Assessment rolls, produced annually by the Ontario Ministry of Finance, are based on site inspections and documentary information (e.g. building permits, civic enumeration, school boards) received by provincial property assessors[36]. Assessment rolls are organised alphabetically by occupant or street address, by property assessment number, or by division (wards, school sections, etc.).

Since the 1970s many municipalities have stored assessment rolls electronically. Accessing information from the pre-1970 period can be difficult since assessment rolls were usuelly hand written and may now be stored on microfilm. Moreover, the way properties were filed may have changed over time; street numbering, division boundaries, and property assessment numbers may also have changed. Inventory developers should exercise caution when using assessment rolls to determine historical land uses because although municipal taxes are based on assessment rolls, they are not always complete and reliable[37].

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[35] Ann Erb, Niagara Escarpment Commission, *Personal Communication*, October 19, 1993.

[36] John Robinson, Toronto Assessment Office, Ministry of Finance, *Personal Communication*, October 19, 1994.

[37] Catherine Mason, University of Waterloo, *Personal Communication*, August 18, 1994.

Table 8: Information Categories and Information Sources

Information Category	Information Source	
General Land Use	Municipal	•Official Plans •Assessment Rolls •Aerial Photographs •Building Permits •Consultants' Reports
	Provincial	•Coal Gasification Plant Waste Sites •Industrial Sites Producing or Using Coal Tar •Waste Disposal Sites •PCB Storage Sites •Manifest and Generator Registration •Underground Storage Tanks
Historical Land Use	Historical	•Fire insurance plans •Land use atlases •Historical atlases •Historical topographic maps •Insurers' Advisory Organisation (1989) Inc. •Municipal directories •Industrial directories •County histories and historical societies •Interviews
Environmental	Environmental	•Soil survey reports from the Ontario Ministry of Agriculture, Food and Rural Affairs •Surficial geology maps from the Ontario Ministry of Northern Development and Mines •Ontario base maps and the Ontario Ministry of Natural Resources' *Petroleum Resources Data System* (PRDS) •Water resource reports, water well records, groundwater probability maps, the Ontario Ministry of Environment and Energy's *Occurrence Report Information System* (ORIS—spills and violations database) •Local conservation authorities
Other	Rural	•Department of Economics and Development *Industrial Surveys of Ontario Municipalities* (1966) •Ontario Ministry of Northern Development and

Table 8: Information Categories and Information Sources

Information Category	Information Source	
		Mines Abandoned Pits and Quarries reports and database and the *Abandoned Mines Information System* (AMIS) •County histories, historical societies, interviews
	Other	•Title searches at land registry and land title offices •Ministry of Environment and Energy Certificates of Approval •Industrial Adjustment Services of Human Resources Development Canada •Statistics Canada Annual Reports •Local Architectural Conservancy Committees (LACACs)

Aerial Photographic Maps

Planners have used aerial photographs since World War II. Small scale aerial photographic maps show how urban areas have expanded. Large scale aerial photographic maps can reveal the outlines of buildings and help determine the location and scale of potentially contaminating activities.

The Special Collections Section of the Ontario Archives comprises a large collection of aerial photographs originally produced by Northway Map Technology, Limited, and its predecessor companies. The holdings are divided into two collections, namely, low-level oblique and high-level vertical shots. The low-level oblique collection consists of 30,000 black and white and 5,000 colour shots covering the years from 1949 through 1978.

Accessing high-level aerial photographic maps can be time consuming and expensive. First, high level maps are stored off site on rolls and, second, the Ontario Archives does not have the equipment to either view or reproduce the photos. Viewing and reproduction facilities are available at the offices of Northway Map Technology, Limited. Northway charges a minimum viewing fee of $150.00, but the fee can be waived if reproductions are ordered. The minimum charge for reproducing post 1960 aerial photographic maps is $56.00 (not including taxes, prices subject to change).

Users can determine whether the company has maps of a particular municipality by consulting the *Preliminary Index to Northway Vertical Aerial Photography 1949-1960*. The company's map holdings are indexed by municipality, year and job number.

For more information:

Northway Map Technology, Limited
44 Upjohn Road
Don Mills, Ontario
M3B 2W1

(P)416-441-6025
(F)416-441-2432

Archives of Ontario
77 Grenville Street
Toronto, Ontario
M5S 1B3
(P)416-327-1557
(F)416-327-1999

Small municipalities without their own collection of aerial photos should inquire about the Ministry of Natural Resources' air photo collection. The collection covers the entire province for the years 1954 through 1978. 1954 aerial photographic maps are at a scale of 1:15,840; the 1978 photos were taken at a scale of 1:10,000.

For more information:

Natural Resources Information Centre
Macdonald Block, Room M1-73
900 Bay Street
Toronto, Ontario
M7A 2C1
(P)416-314-2000
(F)416-314-1593

Building Permits

Recent building permits and plans are available from municipal buildings departments. Permits and plans may show additions and alterations to industrial buildings, heating and plumbing design, underground storage tanks or demolition plans. They may also contain notes on significant and relevant features. Plans may also indicate the type and scale of activity of a historical facility. Filing systems vary among municipalities, but post 1970s permits are often available from computerised systems. Older permits and plans are generally available either on micro film or paper.

Consultants' Reports

Reports commissioned by municipalities and prepared by private consultants may provide useful information. Individual department heads may have information on the existence and availability of such reports.

5.2.2 Provincial Sources

Provincial ministries and agencies have prepared an extensive range of inventories of hazardous waste sites, contaminated sites, landfill sites, hazardous material storage facilities, etc. Provincial inventories can be a valuable source of information to municipalities developing historical land use inventories. Most provincial inventories are relatively simple to use since each inventory consists of no more than two volumes for the entire province. Some provincial inventories are based on relational databases and are available on computer disks.

Inventory of Coal Gasification Plant Waste Sites in Ontario

From the 1850's to the late 1950's, gas for illumination and heat was manufactured in many Ontario municipalities by the carbonisation of coal and sometimes oil. By-products of the gas manufacturing process included tars, sludge, ammonia liquors and other toxic wastes.

Following the incidental discovery of manufactured gas plant waste in Ottawa and Waterloo in the spring and summer of 1986, the Ontario Ministry of Environment and Energy (MOEE) commissioned an *Inventory of Coal Gasification Plant Waste Sites in Ontario*[38]. Volume I of the inventory describes Ontario's 41 known manufactured gas plant sites and provides a qualitative assessment of the potential environmental impact of each. Volume II provides the following information:

- ◊ Site location
- ◊ Site identification
- ◊ Site characteristics
- ◊ Evidence of buried waste
- ◊ Resource characteristics
- ◊ Comments and remarks
- ◊ Off-site disposal areas
- ◊ Location and historical (fire insurance) maps

A list of known manufactured gas plant sites—excerpted from the *Inventory*—appears in Appendix B of this guide. An example of how this and other provincial inventories can contribute to the development of a historical land use inventory is shown in Appendix A. A copy of the *Inventory of Coal Gasification Plant Waste Sites in Ontario* is available (at no charge) from the Ministry of Environment and Energy Public Information Centre (Phone: 416-323-4321).

Inventory of Industrial Sites Producing and Using Coal Tar and Related Tars

The Ministry of Environment and Energy has also developed a document entitled *Inventory of Industrial Sites Producing and Using Coal Tar and Related Tars in Ontario*[39]. The inventory includes information on six industries which used coal gasification by-products, namely:

- ◊ coal tar distillation plants
- ◊ plants producing or applying creosote
- ◊ roofing felt and tarred paper product manufacturers
- ◊ charcoal and coke oven plants for the iron and steel industry
- ◊ industrial manufactured gas plants
- ◊ wood distillation plants

The format of this coal tar inventory is similar to the inventory of coal gasification plants: Volume I catalogues the results of historical record search and site investigations at Ontario's 44 industrial sites which produced or used coal tar and related tars. Volume II has the same structure as Volume II of the *Inventory of Coal Gasification Plant Waste Sites in Ontario*. A complete list of the 44 industrial sites—excerpted from the *Inventory*—appears as Appendix C of this guide. A copy of the inventory can be obtained from the Ministry of Environment and Energy Public Information Centre (Phone: 416-323-4321).

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[38] Intera Technologies Limited. *Inventory of Coal Gassification Plant Waste Sites in Ontario (Vols. I & II)*, Prepared for the Ontario Ministry of the Environment. April, 1987.

[39] Intera Technologies Limited. *Inventory of Industrial Sites Producing or Using Coal Tar and Related Tars in Ontario (Vols. I & II)*, Prepared for the Ontario Ministry of the Environment. July, 1988.

Waste Disposal Site Inventory

The Ministry of Environment and Energy has prepared an inventory of all known active and closed waste disposal sites in the province[40]. The inventory lists 1,358 active sites and 2,334 closed sites. The inventory divides Ontario into six regions with active and closed sites listed separately within each region. The inventory provides the following information on each site:

- ◊ Ontario base map identification number;
- ◊ site number;
- ◊ county;
- ◊ municipality;
- ◊ lot or street number;
- ◊ concession;
- ◊ National Topographic System (NTS) map;
- ◊ Universal Transverse Mercator (UTM) Grid System co-ordinates;
- ◊ type of waste present (i.e., domestic, commercial, hazardous, non-hazardous, liquid, solid and sewage sludge); and
- ◊ class

'Class' refers to the potential degree of risk posed by a site. 'Class A' sites have the potential to impact human health; 'Class B' sites have the potential to impact the natural environment. The latest version of the *Waste Disposal Site Inventory* incorporates locations of coal gasification sites and industrial sites producing and using coal tar. The *Waste Disposal Site Inventory* is out of print but reference copies are available at the MOEE Public Information Centre.

For more information:

Public Information Centre
Ministry of Environment and Energy
135 Saint Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5
(P)416-323-4321
(P)800-565-4923 {Toll Free}
(F)416-323-4564

Ontario Inventory of PCB Storage Sites

The Ministry of Environment and Energy has published the *Ontario Inventory Of PCB Storage Sites*[41]. However, this otherwise comprehensive inventory does not include PCB waste storage sites under the jurisdiction of Environment Canada. Moreover, the *Inventory* exclusively lists

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[40] Ontario Ministry of the Environment, *Waste Disposal Site Inventory*, (PIBS 256). January, 1994.

[41] Ontario Ministry of Environment and Energy, *Ontario Inventory of PCB Storage Sites*, (PIBS # 808-E. July, 1993.

PCB *waste* storage sites: PCBs which are part of active manufacturing or industrial processes are not listed in the inventory.

Section C of the *Ontario Inventory of PCB Storage Sites* includes company names, storage site addresses and designates sites as 'Major' or 'Minor' storage facilities. Major sites contain more than 1000 kilograms of waste PCB liquid; Minor sites contain less than 1000 kilograms of PCB waste. The *Inventory* is organised by MOEE region and district and is sorted alphabetically by company name. Printed copies of the 1993 inventory are available directly from MOEE district offices (Central Region: 416-326-5745, or see the Blue Pages of your telephone directory). The 1995 edition of the inventory is available (on computer diskettes *only*) at no charge.

Manifest and Generator Registration Information

Since 1986, the Ministry of Environment and Energy has annually compiled a database which catalogues hazardous waste generators, transfers and receivers. *The Public Information Data Set (PIDS)* can be used to identify types and quantities of hazardous wastes and the names and addresses of companies which generate, transfer or receive hazardous wastes within a municipality. Experienced database users should have little difficulty using this 14 MB database. The PIDS is available on floppy disks (Dbase IV format) from any of the MOEE's 23 district offices (or call 416-394-7995 for further information). Diskettes may be borrowed from MOEE district offices at no charge.

Underground Storage Tanks

The Inspection Branch of the Ministry of Consumer and Commercial Relations operates the *Inspection, Design and Engineering (INDEX) Database*, a catalogue of gasoline stations and other sites with registered underground storage tanks. INDEX lists the number size, type, and installation date of underground storage tanks and tank upgrades, if any. Storage tank related leaks or spills are also recorded in the database. However, gasoline stations superseded by other land uses prior to 1990 do not appear in INDEX.

Listings may be obtained upon written request for a charge of $0.25 per record. Requests for pre-1990 listings must be made on an address by address basis at a cost of $25.00 per record.

For more information:

Inspection Branch
Technical Standards Division
Ministry of Consumer and Commercial Relations
3rd Floor, Mutual Group Centre
3300 Bloor Street West
Etobicoke, Ontario
M8X 2X4.
(P)416-325-2000
(F)416-325-5054

5.2.3 Historical Sources

A number of sources provide detailed information on historical land use. Historical land use inventory developers should begin an inventory with present land use and move back through time. Current street names and numbers establish a consistent and reliable reference point for subsequent historical searches. Moreover, modern records are usually the most comprehensive sources of information and usually include subdivision and plan numbers, the number and type of land uses and the extent of areas of interest.

This guide uses the following three criteria to evaluate the utility of historical sources which can be used to develop a historical land use inventory:

i) **Availability and Coverage:** The availability and coverage criterion ranks the comprehensiveness (in terms of space and time) of a specific historical information resource and indicates the availability of the resource to Ontario municipalities.

ii) **Applicability:** The applicability criterion ranks the overall utility of a historical resource to inventory developers.

iii) **Ease of Use:** The ease of use criterion ranks the amount of time and analysis required to extract relevant information from a historical resource.

These three criteria are applied to a variety of historical sources below.

Historical Maps: Fire Insurance Plans, Land Use Atlases, Historical Atlases

Historical maps are an excellent source of information for the development of historical land use inventories and should be consulted as a primary resource. Historical maps often provide detailed information on company name and location, type and scale of industrial activity and potential hazards.

A fire insurance plan is a map of a community (usually drawn at a scale of 50 feet to the inch or 1:600) developed by insurance companies to estimate insurance risk. Through the use of written entries, symbols, and colour keys, a historical map indicates the type of building construction (wood-frame, unit-masonry, etc.), building height, occupancy, fire-proof areas, water-mains and other fire protection facilities. Most importantly, fire insurance plans frequently identify inflammable / hazardous building uses and building contents. Figure 3 is an excerpt from a 1949 fire insurance plan for a mixed residential, commercial and industrial area in the Town of Lindsay, Ontario.

Land use atlases are less detailed than fire insurance plans. At scales ranging from 100 to 300 feet to the inch (1:1,200 to 1:3,600) land use maps show buildings, property lines, street names and numbers, subdivision plan and lot numbers, generalised fire risk and protection information and lists some property owners. Construction method (i.e. wood-frame or unit-masonry) are differentiated by colour. In contrast to fire insurance plans, land use atlases were developed for the general public[42]. Excerpts from land use atlases appear in Appendix A.

Illustrated historical atlases were published for nearly 30 southern Ontario counties from 1875 through 1881. Reprinted between 1969 and 1973, land use atlases contain historical accounts of individual counties, maps of towns and villages and often identify major commercial and industrial facilities. A list of historical atlases available at the Metropolitan Toronto Reference Library appears in Appendix D.

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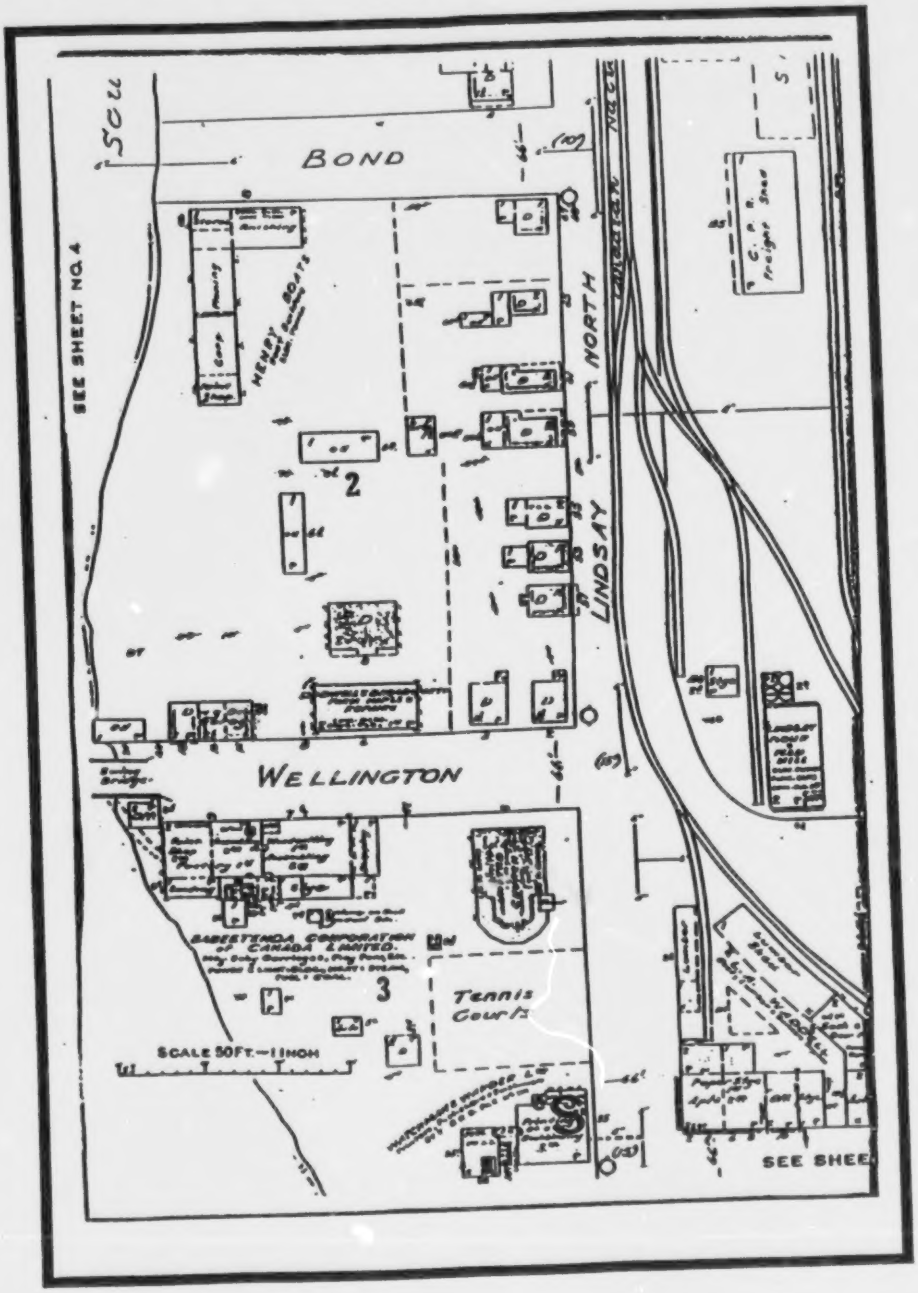
[42] R.J. Hayward, "Insurance Plans and Land Use Atlases: Sources for Urban Historical Research," in *Urban History Review*, No. 1-73, pp. 2-9.

For more information:

Map Room
History Department, 4th Floor
Metropolitan Toronto Reference Library
789 Yonge Street
Toronto, Ontario
M4W 2G8
(P)416-393-7164
(F)416-393-7229

An excerpt from a historical map of Oakville, Ontario (1877) appears in Figure 4.

Figure 3: An Excerpt from the 1949 fire insurance plan for the Town of Lindsay, Ontario. Reproduced with permission of the Insurers' Advisory Organization (1989), Inc.[43]


BOND
WELLINGTON
NORTH
LINDSAY
SEE SHEET NO. 4
HENRY BOATS
2
3
C. P. R. Freight Shed
Tennis Courts
SCALE 50FT.—1 INCH
SEE SHEE

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[43] Underwriters' Survey Bureau, Ltd., 1949. *Insurance Plan of the Town of Lindsay*. March, 1949.

i) Availability

Access to historical atlases, land use maps and fire insurance plans may be somewhat constrained by copyright restrictions and the fact that many plans were lost or destroyed.[44]. In terms of both time and space, the most comprehensive plans and maps were produced by Chas. E. Goad, Ltd., from 1875 through 1923. Goad's plans and maps are available for numerous villages and hamlets across Canada in loose-sheet form. Plans and maps of larger urban centres often appear in bound volumes.

Many plans and maps are available from public libraries, university map collections, municipal archives and the Ontario Archives. The most extensive public collection of fire insurance plans is within the National Map Collection at the National Archives of Canada. The collection is comprised of more than two thousand plans from over fourteen hundred Canadian towns and villages. The collection also contains the complete business records of Chas. E. Goad, Ltd., as well as all of the plans of the Insurers' Advisory Organisation (IAO) and its predecessor companies (the Underwriters' Survey Bureau and the Canadian Underwriters' Association). The IAO stopped producing fire insurance plans in 1973 and sold its entire stock to the National Archives of Canada in 1975[45]. However, the IAO retains copyright for the maps. The National Archives of Canada fire insurance plans are available for reference and research purposes only.

Inventory developers should consult the catalogue of *Fire Insurance Plans in the National Map Collection* to see if plans exist for a particular municipality[46].

For more information:

Archivist
Cartographic Records Collection
Archives of Ontario
77 Grenville St.
Toronto, Ontario
M7A 2R9
(P)416-327-1557

Map Area
Researcher Services Division
National Archives of Canada
395 Wellington Street, 3rd Floor
Ottawa, Ontario
K1A 0N3
(P)613-992-8188
(F)613-995-6274

The Association of Canadian Map Libraries and Archives has created an inventory of fire insurance plans held in Ontario archives and libraries entitled *Canadian Fire Insurance Plans in Ontario Collections: 1876-1973*[47]. The inventory includes fire insurance plans held in the National Archives of Canada, the Archives of Ontario, Ontario university archives, and fifteen county archives.

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[44] R.J. Hayward, "Insurance Plans and Land Use Atlases: Sources for Urban Historical Research," in *Urban History Review*, No. 1-73, pp. 2-9.

[45] R.J. Hayward. *Fire Insurance Plans in the National Map Collection*. National Archives of Canada. Ottawa: 1977.

[46] Robert J. Hayward. *Fire Insurance Plans in the National Map Collection*. Public Archives of Canada, National Map Collection, Ottawa. 1977.

[47] Marcel Fortin, Lorraine Duprueil, and Cheryl A. Woods. *Canadian Fire Insurance Plans in Ontario Collections*. Association of Canadian Map Libraries and Archives, Occasional Paper # 5. Ottawa: 1995.

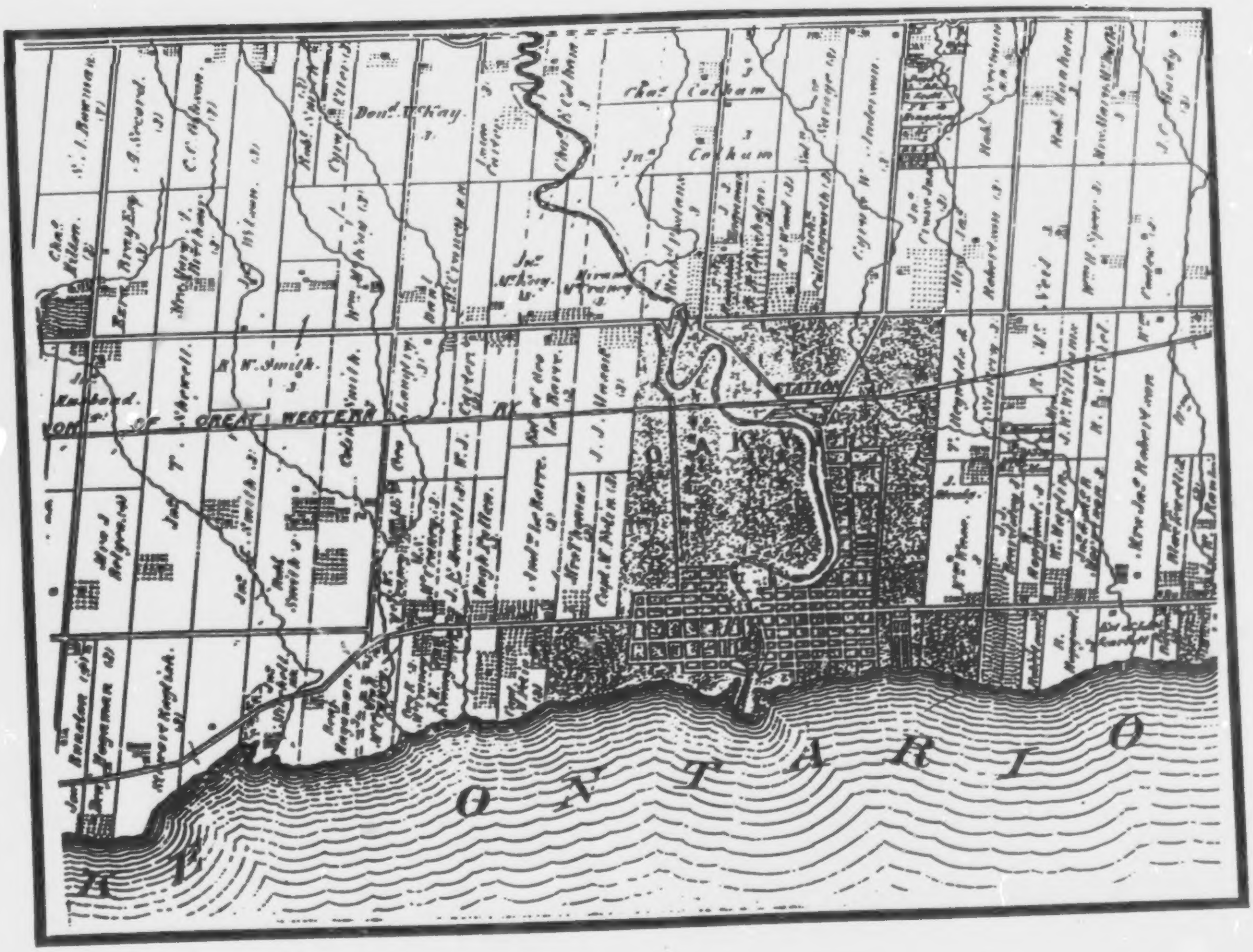
O N T A R I O
STATION
GREAT WESTERN
O A K V
Don^d. M^c.Kay.
Cha^s. Colham
Jn^o. Colham

Figure 4: Detail from the 1877 map of the Town of Oakville from the *Illustrated Historical Atlas of Halton.*[48]

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[48] Walker & Miles, 1877. *Illustrated Historical Atlas of the County of Halton*. Reprinted by Richardson, Bon & Wright. Owen Sound: 1971.

The inventory includes the following information about each set of fire insurance plans: publication date, geographic location, number of sheets and host collection. The inventory will be expanded to include other provinces at a future date. *Canadian Fire Insurance Plans in Ontario Collections: 1876-1973* can be purchased for $24.00 (postage and handling included) from the Association of Canadian Map Libraries and Archives.

For more information:

M. Louis Cardinal
Association of Canadian Map Libraries and Archives
c/o the Visual and Sound Archives Division
National Archives of Canada
395 Wellington Street
Ottawa, Ontario
K1A 0N3
(P)613-996-7619
(F)613-995-6575
(E-mail)LCARDINAL@ARCHIVES.CA.

The Insurers' Advisory Organisation (1989), Inc., which claims the copyright to all fire insurance plans, is a significant resource for the development of a historical land use inventory. The IAO is the successor organisation to the Canadian Underwriters Association and the Underwriters' Survey Bureau—the organisations which originally developed fire insurance plans and held copyright.

The IAO is also the source of Property Underwriters' Reports and Property Underwriters' Plans. Underwriters' Reports contain detailed descriptions of building materials, industrial sites, industrial processes, and a special section describing hazardous materials. Property Underwriters' Plans are similar to fire insurance plans in that they provide site overviews, building elevations, and building uses. Underwriters' Plans provide detailed site boundaries and building locations at a scale of 50 feet to the inch.

The IAO has developed a *Historical Environmental Information Reporting System* (HEIRS) which is available on a fee for service basis. HEIRS I contains fire insurance plans and Property Underwriters' Reports and Plans. HEIRS II includes a written interpretation, if any, of documents contained in HEIRS I.

IAO fire insurance plans are filed alphabetically by street name, address and city. Small towns and rural areas are indexed by major intersection.

For more information:

Insurers' Advisory Organisation (1989), Inc.
18 King St. East, Suite 700
Toronto, Ontario
M5C 1C4
(P)416-368-1801
(F)416-368-7703

ii) Applicability

Fire insurance plans and land use atlases can provide company name, location, the nature and scale of a business and potential hazards. In some instances, plans and atlases indicate street name changes by bracketing former street names next to the current name.

Historical and land use maps, plans and atlases provide a snapshot of an area at a particular time and help establish a reliable context for information garnered from other sources. Since building functions are indicated, inventory developers can distinguish between buildings used for administration and production, a key advantage over using city directories, for example. Although a land use may remain essentially constant over a number of years, its scale or location may shift. Plans and atlases furnish invaluable information about shifts in the scale of activities and changes in land use, but also about the relationship of a particular industry to adjacent sites and industries. This information is essential to develop a historical profile of a site or industry.

Fire insurance plans and historical atlases are accurate and reliable because they are based on actual chain and tape measurements and field observations. Moreover, plan and atlas developers would often supplement field observations with information from the office of the local land registrar[49].

iii) Ease of Use

Fire insurance plans and land use atlases are fairly easy to use. A straightforward visual review of land use atlas maps reveals their contents. Fire insurance plans require more detailed review since plans are frequently linked via symbols to detailed lists describing sites, buildings and functions.

Directories

Provincial directories of small towns and villages are available from the late 1800s until about 1911. A number of directories were published for Ontario counties between 1870 and 1910. After 1911, small settlements were often incorporated into the directories of larger, adjacent municipalities[50].

Smaller towns and villages which do not appear in post 1911 municipal directories may have (a) grown enough to warrant their own municipal directory or (b) such settlements may simply have been excluded from subsequent directories. In either case, small settlements may only appear in directories at intervals of several years or even decades.

Today, Ontario's two main publishers of municipal or city directories are Vernon Directories, Limited (Hamilton, Ontario) and Might City Directories, Limited (Toronto, Ontario). City directories are typically divided into three sections: citizens' (name) directory, street directory and classified business directory. An excerpt of a 1936 Might street directory of Timmins, Ontario, is shown as Figure 5.

Other types of directories can also provide useful information. *Scott's Industrial Directories*, published every second year since 1958 (annually since 1988), contain valuable information on manufacturers. The second section of *Scott's Industrial Directories* lists manufacturers by municipality and contains manufacturer address, telephone number, principal products and number of employees. An excerpt from the 1960 *Scott's Industrial Directory* is shown as Figure 6.

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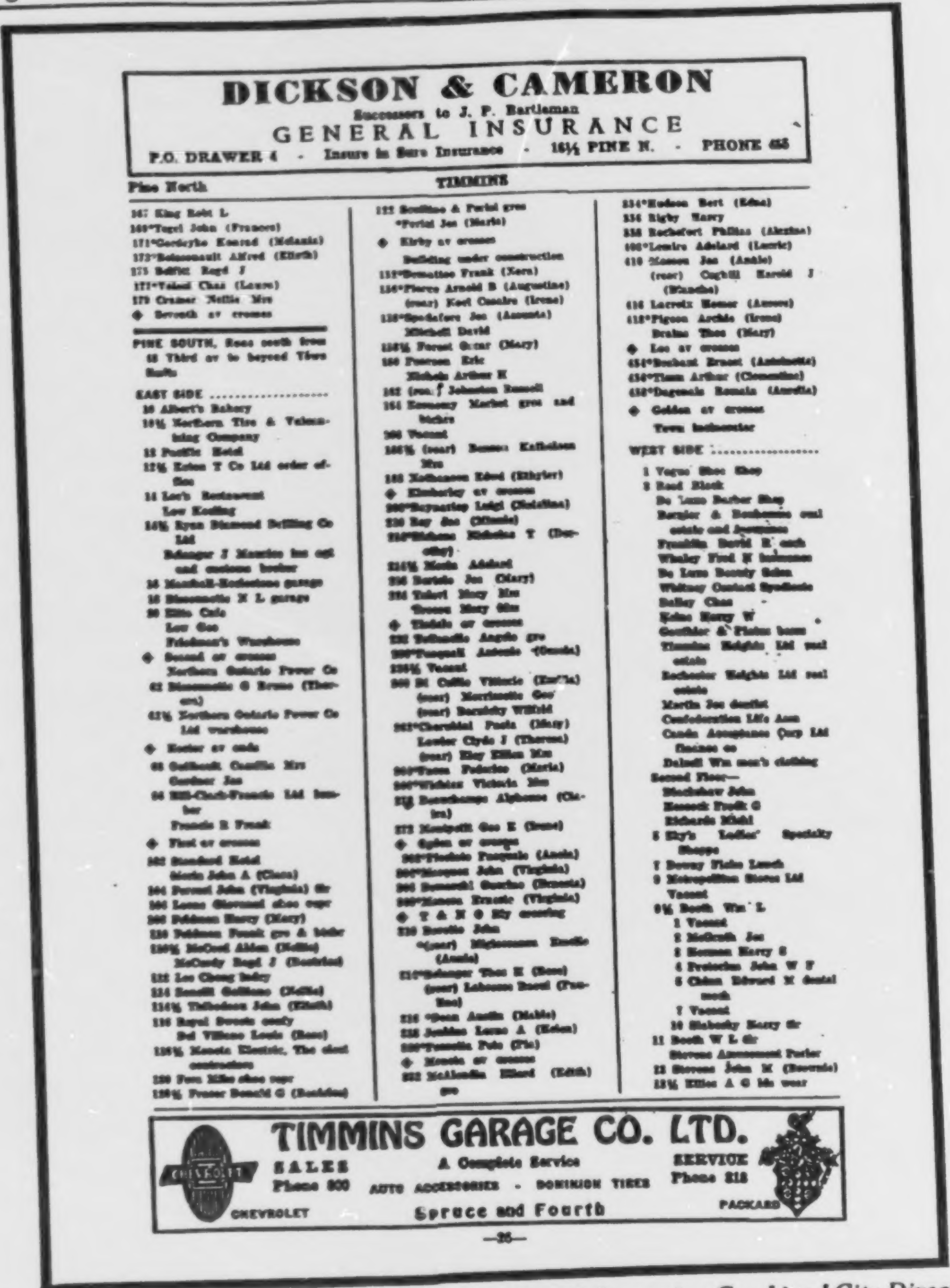
[49] R.J. Hayward. "Insurance Plans and Land Use Atlases: Sources for Urban Historical Research," in *Urban History Review*, No. 1-73, pp. 2-9.

[50] M.E Bond. *Canadian Directories 1790-1987: A Bibliography and Place-Name Index (Vols. 1-3)*. Ottawa: National Library of Canada, 1989.



DICKSON & CAMERON
Successors to J. P. Bartleman
GENERAL INSURANCE
P.O. DRAWER 4 - Insure in Sure Insurance - 16½ PINE N. - PHONE 455

Pine North TIMMINS

TIMMINS GARAGE CO. LTD.
SALES Phone 800
A Complete Service
AUTO ACCESSORIES - DOMINION TIRES
SERVICE Phone 818
CHEVROLET Spruce and Fourth PACKARD

—35—

Figure 5: An excerpt from Might's *Schumaker and South Porcupine Combined City Directories (1936).*[51]

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[51] Might Directories Ltd. *Might's Schumacher and South Porcupine Combined City Directories, 1936.* Toronto: Might Directories Limited: 1936.

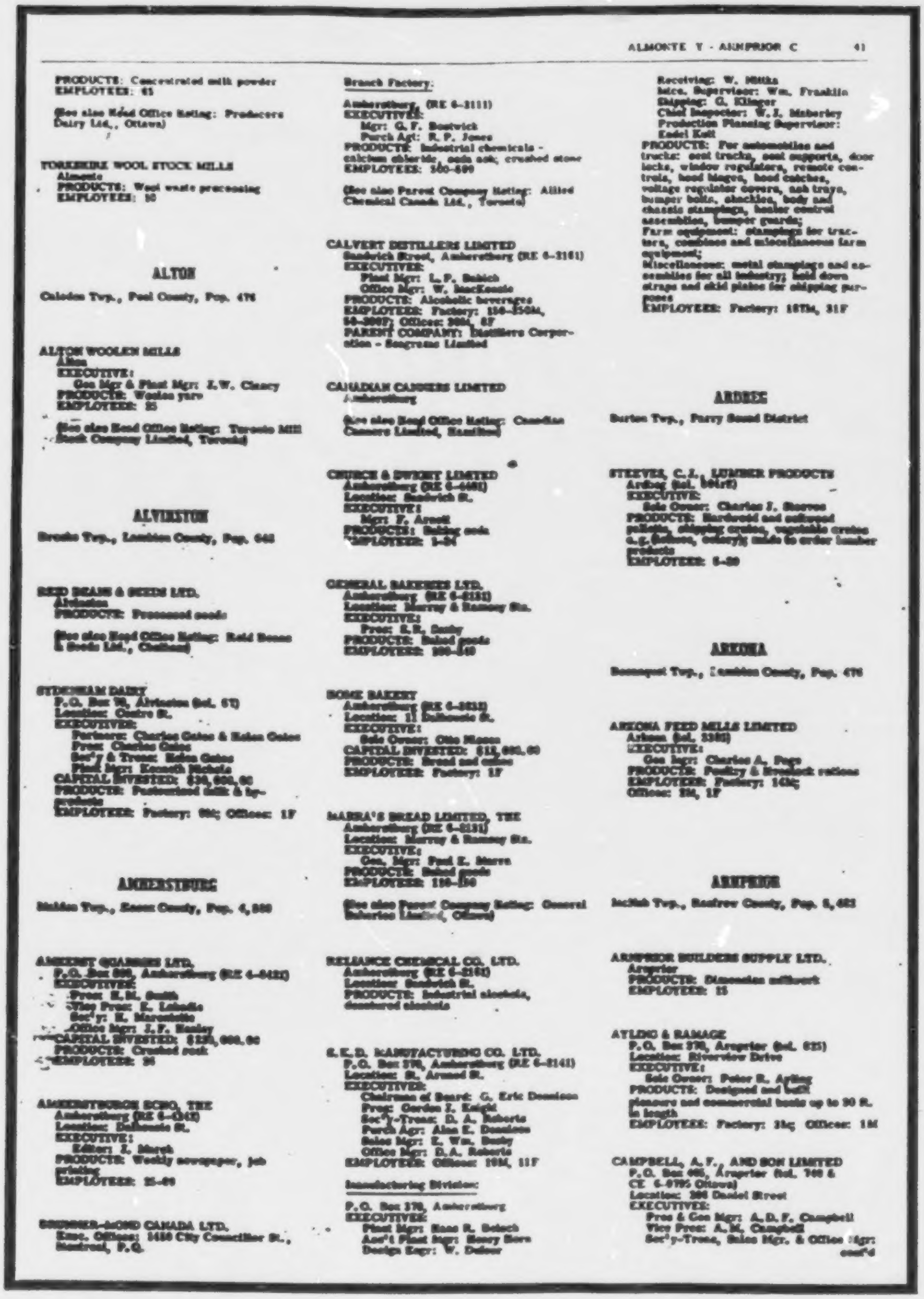

Figure 6: Excerpt from Scott's *Ontario Industrial Directories (1960).*[52]

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[52] Penstock Publications, Ltd., *Scott's Ontario Industrial Directory*, (2nd ed.) Toronto: 1960.

Another valuable resource is the *Canadian Trade Index (CTI)* published annually by the Canadian Manufacturers' Association (CMA). Although the format of the *CTI* has changed over the years, the two most consistently useful sections are the 'Alphabetical List of Manufacturers' and the 'Geographic List'.

The alphabetical list of manufacturers includes company name, street address, telephone number, and a summary of manufacturing activities. The summary lists products, brand names, number of employees and annual sales. Alphabetical lists date to 1900. The geographic list began in 1963 and indexes companies alphabetically by municipality, but does not contain street addresses.

Today the *Canadian Trade Index* lists 55-60% of Canadian manufacturers representing 85-90% of Canadian production capacity. The *CTI* does not list the 30-35% of Canadian manufacturers with fewer than 10 employees, but lists all of Canada's largest manufacturers. Companies are not required to be members of the CMA nor pay a fee to be listed in the *CTI*. An example from the Geographic Section of the 1994 *Canadian Trade Index* is shown in Figure 7.

i) Availability

Three important catalogues list city directories and indicate which libraries or archives hold them. Most public and university libraries contain directories of the municipalities they are situated in. The three documents are:

1. Dorothy Ryder. *Checklist of Canadian Directories: 1790-1950*. Ottawa: National Library of Canada, 1979.

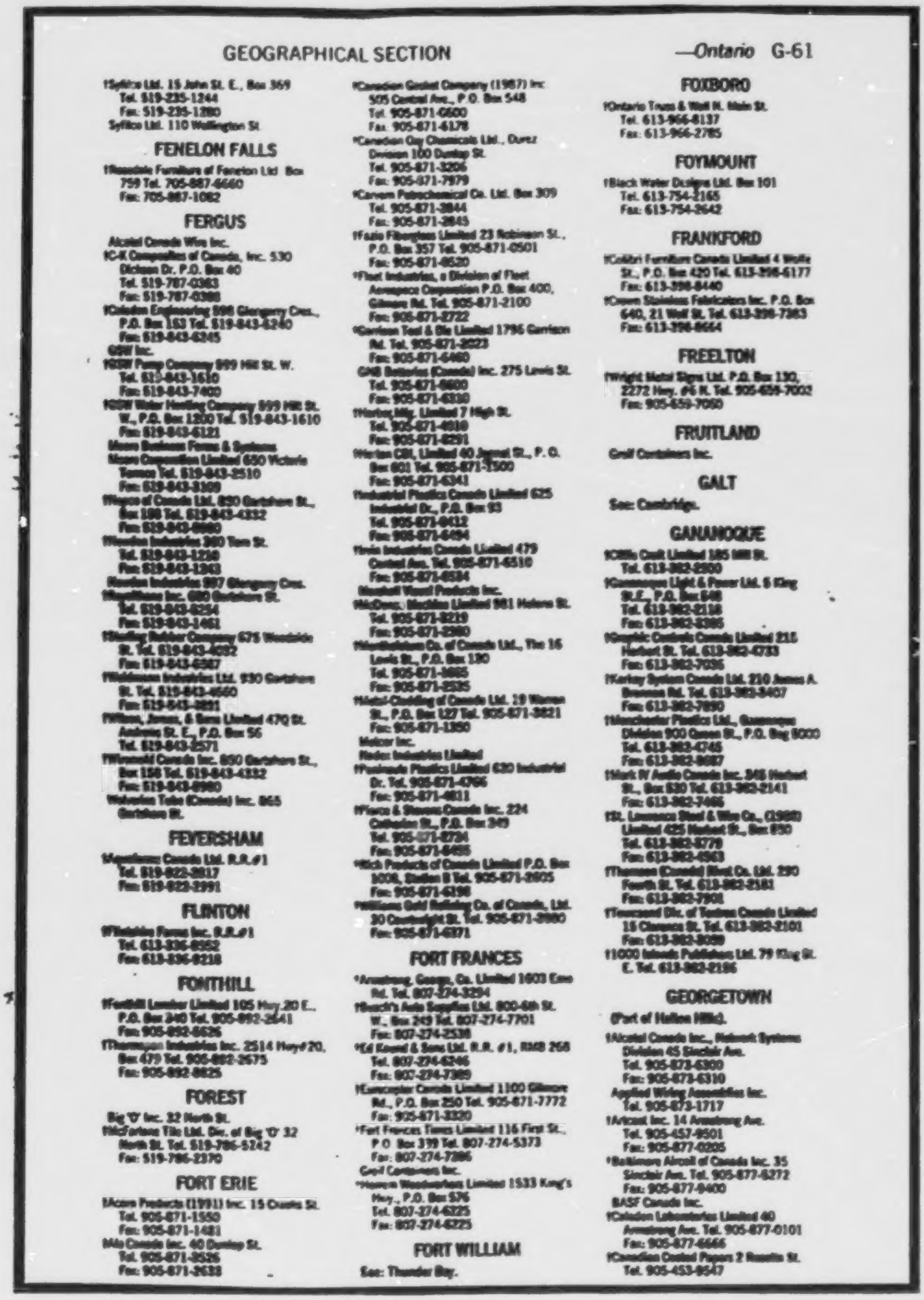
The *Checklist of Canadian Directories: 1790-1950* contains a large section on Ontario directories. Directories are first listed alphabetically by municipality and then chronologically. Each annotated entry identifies the library or archive which contains any given directory.

2. Mary E. Bond. *Canadian Directories 1790-1987 (Vols. 1-3): A Bibliography and Place-Name Index*. Ottawa: National Library of Canada, 1987.

Only the holdings of the National Library and Archives of Canada were included in this update of the *Checklist of Canadian Directories*. Volume 1 is a bibliography which includes a large section on Ontario. Annotated entries are listed alphabetically by municipality and chronologically and identify the directory year and publisher. Volumes 2 and 3 list small settlements which were included in provincial, county or larger municipal directories. For example, the independent Village of Yorkville, which is now a part of downtown Toronto, is cross-referenced to Toronto directories for a number of years.

3. Mary E. Bond. *Canadian Directories: A Guide to Interlibrary Loan and Reproduction Policies*, Ottawa: National Library of Canada, 1988.

Canadian Directories: A Guide to Interlibrary Loan and Reproduction Policies lists libraries in alphabetical order, sorted by province or territory. The *Guide* lists interlibrary loan and reproduction policies of eighteen Ontario libraries. Moreover, the *Guide* lists the scope (municipalities and years for which directories are available), size, format (hard copy, microform/film), and storage method (closed or open stacks) of individual directory collections.



GEOGRAPHICAL SECTION —*Ontario* G-61

FENELON FALLS

FERGUS

FEVERSHAM

FLINTON

FONTHILL

FOREST

FORT ERIE

FORT FRANCES

FORT WILLIAM

FOXBORO

FOYMOUNT

FRANKFORD

FREELTON

FRUITLAND

GALT

GANANOQUE

GEORGETOWN

Figure 7: Detail from the geographic section of the *Canadian Trade Index (1994)*.

ii) Applicability

Street and classified business sections of municipal directories are most useful for creating historical land use inventories. Street directories should be reviewed for company names and classified business directories may provide valuable information on business activities.

Directories are useful for locating small-scale industries or workshops which were often located in mixed use areas. For instance, classified business directories frequently list the following potentially contaminating activities: aluminium manufacturers, blacksmiths, coal and wood suppliers, electroplaters, metal engravers, founders, glue manufacturers, ink makers, photographic suppliers, tanneries, etc.

The geographic listing section of the *Canadian Trade Index* can help inventory developers determine which companies were or are located in a particular municipality. Moreover, geographic listing sections can be used to verify that all companies in a particular year are accounted for in a historical land use inventory. For example, if other sources such as city directories only list company names, the CTI's alphabetical list of manufacturers may help determine the activity of a company.

iii) Ease of Use

The use of directories is simple but may be time consuming. A lap-top field computer makes recording information easier and more efficient. The recommended approach is to start with the most recent street directory available for an area of interest. Occupancy changes may or may not indicate a change in land use

Inventory developers should consult directories in conjunction with historical maps to gain additional insight into historical land uses. Inventory development should be co-ordinated with a year that has a strong documentary record, e.g. a year in which historical maps such as fire insurance plans and/or a municipal directory are available so addresses and activities can be cross-referenced. If city directories have been published annually for a municipality, they should be reviewed at 5 or 10 year intervals. Directories for intervening years should be consulted to trace land use changes. Begin the search at the middle year (e.g. year three of a five year search regimen or year five of a ten year search) and move forward if the old land use is found, move backward if the new land use is found. For a single site, this search can be accomplished in minutes.

Geographic area listings make the *Canadian Trade Indexes* very easy to use. The alphabetical listing of manufacturers uses symbols to describe the number of employees and annual sales.

Each of the directories listed above is available for reference purposes from municipal libraries and public archives. The most extensive collection of directories is housed at the National Library and Archives of Canada in Ottawa.

5.2.4 Environmental Sources

Soil and Geology

The Ontario Ministry of Agriculture, Food and Rural Affairs has developed soil survey reports that include soil type maps (scale: 1:50,000 or 1:100,000) and agricultural land use maps that usually cover an entire township (scale: 1:50,000). These maps are available from the ministry's county agricultural representatives.

The Ontario Ministry of Northern Development and Mines has developed surficial geology maps (scale: 1:50,000) for most Ontario townships. Most of the ministry's geological information is available in digital format on the Earth Resource Land Information System (ERLIS). In addition to surficial geology maps, ERLIS contains bedrock geology maps and 8,000 other Ontario geological maps.

The Ontario Ministry of Natural Resources maintains a database of bore-holes and wells within its jurisdiction including oil and gas wells, brine caverns, and deep-well disposal sites. Each of the 40,000 records contains information on well lithology, E-logs (Electric- or geophysical-logs are available only as paper records) and hydraulic heads for selected well formations. Approximately 13,000 records are computerised on the Petroleum Resources Data System (PRDS) at the Petroleum Resource Centre in London, Ontario.

For more information:

Mines Library
Willet Green Miller Centre
933 Ramsey Lake Road, Room A3
Sudbury, Ontario
P3E 6B5
(P)705-670-5614 {Reference Desk}
(F)705-670-5622

Petroleum Resource Centre
Ministry of Natural Resources
659 Exeter Road
London, Ontario
N6E 1L3
(P)519-661-2766
(F)519-661-2809

Mines and Mineral Information Centre
2nd Floor, Macdonald Block
900 Bay Street, Room M2-17
Toronto, Ontario
M7A 1C3
(P)416-314-3803
(F)416-314-3797

Physical Features

The Ministry of Natural Resources has several series of maps (at various scales) which may provide valuable environmental information to inventory developers. The Ontario base map series shows many features of interest including surface water, vegetation, marshes, buildings and other infrastructure. Base maps of southern Ontario are at a scale of 1:10,000 and northern Ontario base maps are at a scale of 1:20,000. An Ontario base map of the Owen Sound area is shown in Figure 8.

The Ontario Ministry of Northern Development and Mines publication *The Physiography of Southern Ontario* contains a great deal of information about southern Ontario's soil and surface characteristics including descriptions of major surface features in fifty-five physiographic regions.[53]

For more information:

Natural Resources Information Centre
Ministry of Natural Resources
Macdonald Block, Room M1-73
900 Bay Street
Toronto, Ontario
M7A 2C1
(P)416 314-2000
(F)416-314-1593

Mines and Minerals Information Centre
Ministry of Northern Development and Mines
MacDonald Block, Room M2-17
900 Bay Street
Toronto, Ontario
M7A 1C3
(P)416-314-3800
(F)416-314-3797

Water Resources

The Ontario Ministry of Environment and Energy has information on water resources and groundwater for several regions of the province. The MOEE has produced groundwater probability maps for eleven counties and the regional municipalities of Peel and Halton. Eight maps provide information on major aquifers in southern Ontario and twenty-two reports provide information on surface and groundwater in various drainage basins. The *Water Well Information System (WWIS)* database catalogues more then 316,000 water wells drilled in fifty three Ontario counties up to 1984. Records of water wells drilled after 1984 are available from MOEE district and regional offices. An individual water well record contains information on well location, water level, water use and formation depth.

For more information:

Ministry of Environment and Energy
Drinking Water Surveillance Section
Environmental Monitoring and Reporting Branch
125 Resources Road, West Wing
Etobicoke, Ontario
M9P 3V6
(P)416-235-6300
(F)416-235-6235

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[53] Lyman John Chapman and Donald F. Putnam, *The Physiography of Southern Ontario* (3rd Ed.). Special Volume #2. Ontario: Government of Ontario Printer. 1984.

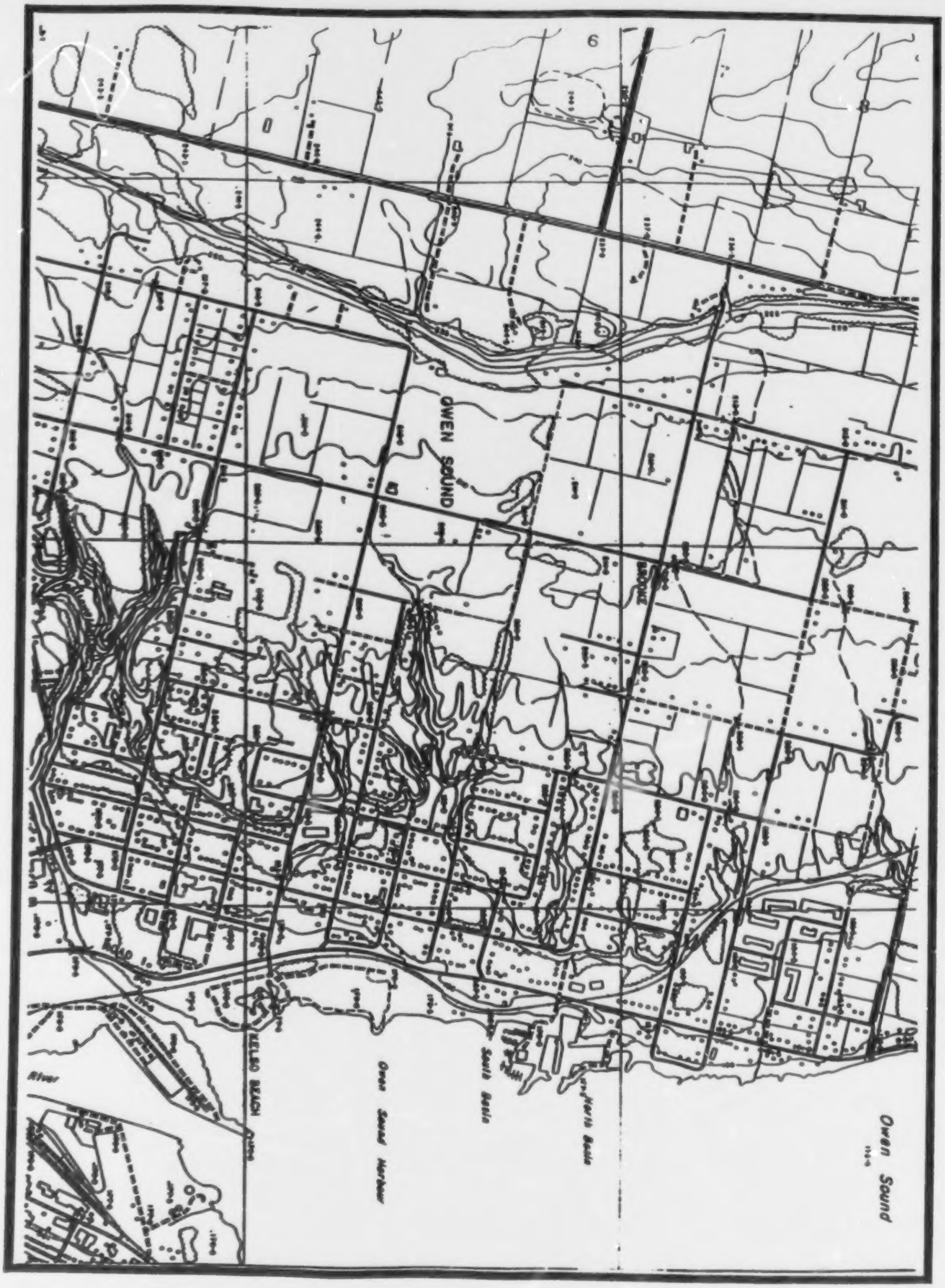

6
8
OWEN SOUND
Owen Sound
Owen Sound Harbour
KELSO BEACH
South Basin
North Basin
River

Figure 8: Ontario Base Map for the Owen Sound area shown at 64% of original size (Scale 1:10,000). Air Photography 1983. Ministry of Natural Resources, 1985.

Spills

The *Occurrence Report Information System* (ORIS) of the Ministry of Environment and Energy Spills Action Centre lists complaints, violations and spills reported to the ministry and other pollution incidents investigated by ministry field personnel. Of the approximately 15,000 occurrences entered into ORIS each year since 1988, approximately one-third are complaints (odour, noise dust, water contamination, etc.) and one third are violations (failure to manifest or label hazardous goods, unsafe transfers, etc.) The balance (approximately 5,000 per annum) are actual spills with the potential to adversely impact the natural or human environment. ORIS provides a comprehensive index of spills reported to the MOEE after January 1, 1988. (While as many as 15,000 reports have been registered annually since 1991 at MOEE regional offices, only violations and spills are transferred to the central ORIS database.)

For more information:

Spills Action Centre
Investigation and Enforcement Branch
Ministry of Environment and Energy
5775 Yonge Street, 10th Floor
North York, Ontario
M2M 4J1
(P)416-325-3000
(F)416-325-3011

Other Environmental Information

Local conservation authorities can provide relevant information on natural resources within a watershed. With increasing development pressures on watersheds, many conservation authorities have conducted watershed studies which include environmental information which may be useful in a historical land use inventory. Ontario's 38 conservation authorities are represented by the Association of Conservation Authorities of Ontario (ACAO). ACAO is mandated to "support and enhance an effective watershed-based conservation network for Ontario" through a host of initiatives including maintaining a database on watershed/ecosystem management in Ontario. Inventory developers should contact their local conservation authority or ACAO for information on surface or groundwater management studies.

For more information:

Association of Conservation Authorities of Ontario
418A Sheridan Street
Peterborough, Ontario
K9H 3J9
(P)705-749-9131
(F)705-749-9345

5.2.5 Rural Sources

Historically, most development in Ontario has occurred within the urban-rural fringe, an area generally not well covered by historical sources such as fire insurance plans and municipal directories. Available information sources which describe the urban-rural fringe and purely rural areas are not usually as comprehensive as urban sources.

Historical and Topographic Maps

During the late 1800s, a historical atlas was published for each county in southern Ontario. County atlases are comprised of maps for each village, township and town in a county. The maps primarily indicate lot ownership, but may identify large factories, grist mills, saw mills, etc. (Examples of historical maps for the Oakville and Toronto areas are shown in Figure 4 and Appendix A, respectively.)

Topographic maps of Ontario have been produced periodically since 1905 by either the federal or provincial governments. From 1905-1931, the federal Department of National Defence produced the *National Topographic Map Series* at a scale of 1:63,360 (one inch to the mile) for the Windsor-Quebec City axis. The Survey and Mapping Branch of the Department of Natural Resources began producing topographic maps based on aerial photographs in 1927 and eventually adopted the international metric scale (1:50,000) in the mid-1950's. In the 1960's, the Survey and Mapping Branch expanded its topographic mapping program to include 1:25,000 scale topographic maps, most notably of urbanised and other populous areas.

In 1977, however, the Survey and Mapping Branch abandoned its 1:25,000 scale topographic map program and all provinces except Manitoba began producing topographic maps. Since 1978, the Ontario Ministry of Natural Resources has produced the *Ontario Base Map Series*, a series of topographical maps at a scale of 1:10,000 for southern Ontario and 1:20,000 for northern Ontario. While smaller scale topographic maps are of special interest to inventory developers, pre-1960's topographic maps often identify individual buildings and building functions (e.g. mills, factories, blacksmith shops, etc.).

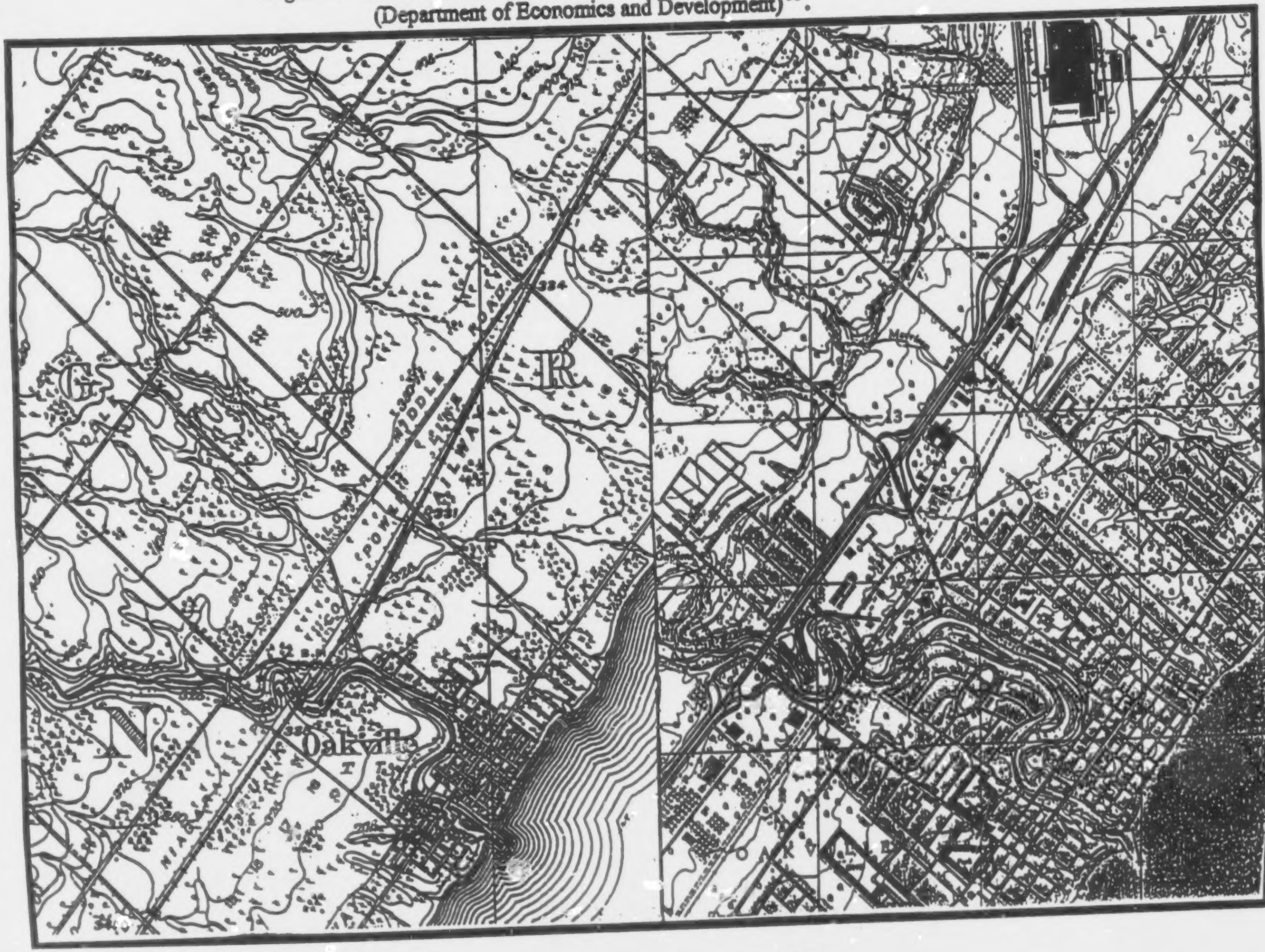
Today, the federal government produces topographic maps at a scale of 1:50,000, 1:250,000 and 1:1,000,000. The province of Ontario produces topographic maps at scales below 1:25,000. Examples of topographic maps from 1909 and 1961 for the Oakville area are shown in Figure 9.

For more information:

Natural Resources Information Centre
Ministry of Natural Resources
Macdonald Block, Room M1-73
900 Bay Street
Toronto, Ontario
M7A 2C1
(P)416-314-2000
(F)416-314-1593

Canada Map Office
Natural Resources Canada
615 Booth Street
Ottawa, Ontario
K1A 0E9
(P)800-465-6277
(F)800-661-6277

Figure 9: An excerpt from the *Industrial Surveys of Ontario Municipalities (1966)* for Napanee, Ontario (Department of Economics and Development)[31].



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[31] Surveys and Mapping Branch, *Topographic Map of Oakville*, (30 M/5). 1909 & 1961.

Industrial Surveys of Ontario Municipalities

In 1966, the Ontario Department of Economics and Development conducted an industrial survey of all Ontario municipalities. The survey collected information about services and labour costs and, perhaps most importantly for the development of a historical land use inventory, the survey lists "existing manufacturing industries" and their products indexed by municipality. While the survey does not provide company addresses, it is an important source of rural industrial information.. A sample industrial survey of Napanee, Ontario, is shown in Figure 10.

Abandoned Pits, Quarries and Mines

The Ministry of Natural Resources (MNR) has compiled an inventory of more than 6,000 abandoned pits and quarries through its Abandoned Pits and Quarries Rehabilitation Fund. (Under the programme, the MNR levies six cents per tonne of quarried material and uses the funds to rehabilitate abandoned pits and quarries, primarily south of the Penetang-Ottawa line. To date the programme has rehabilitated more than 60 privately or municipally owned abandoned pits and quarries.) Abandoned pits and quarries which may have been used for waste disposal—a small minority of sites—are of special interest to municipalities developing historical land use inventories due to potential health and safety risks. The inventory is available at MNR district and area offices[55].

For more information:

Non-Renewable Resources Program Development Section
Resource Stewardship and Development Branch
Ministry of Natural Resources
Times Square Building
PO Box 7000
Peterborough, Ontario
K9J 8M5
(P)705-740-1267
(F)705-740-1257

Reports and maps from the Ontario Geological Survey provide information on mineral extraction, pits and quarries in Ontario. One report lists Ontario's 750 known inactive and abandoned limestone quarries and describes 147 in detail[56]. Quarries are categorised by MNR district and identified by lot and concession numbers as well as Universal Transverse Mercator (UTM) grid co-ordinates.

General and geographical indexes for all reports and maps published since 1891 are available from the libraries of the Ontario Geological survey.

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[55] Brian Messerschmidt, Pits and Quarries Rehabilitation Policy Officer, Ministry of Natural Resources, *Personal Communication*, October 21, 1994
Gary Ward, Co-ordinator, Abandoned Pits and Quarries Rehabilitation Fund Programme, Ministry of Natural Resources. *Personal Communication*. July 4, 1995.

[56] D.F. Hewitt and P.F. Karrow. *Sand and Gravel in Southern Ontario*. Ontario Department of Mines, Industrial Mineral Report No. 11. 1963.

For more information:

Mines Library
Willet Green Miller Centre
933 Ramsey Lake Road, Level A3
Sudbury, Ontario
P3E 6B5
(P)705-670-5614
(F)705-670-5622

Mines and Minerals Information Centre
Ministry of Northern Development and Mines
MacDonald Block, 2nd Floor
900 Bay Street
Toronto, Ontario
(P)416-314-3803
(F)416-314-3797

Operating under the authority of the *Mining Act*, the Abandoned Mines Section of the Ministry of Northern Development and Mines has compiled an inventory of abandoned mines and selected industrial mineral pits and quarries. (The vast majority of pits and quarries are administered under the *Aggregate Resources Act* and the *Pits and Quarries Act* by another department of the ministry.)

The Abandoned Mines Information System (AMIS) lists mine locations (indexed by UTM grid co-ordinates, lot and concession, township, latitude and longitude), access, ownership, status, years of operation, mine features, and hazard ratings for approximately 6,500 defunct mines. Reports, maps, slides and/or videos may be available for the more than 2,000 abandoned mines which have undergone a site assessment. (While the pace of abandoned mine site assessment has been curtailed in the last two years, the program is progressing steadily.[57]) Only mines deemed to be hazardous are included in AMIS: the Abandoned Mines Hazard Rating System (AMHAZ) employs Expert System Technology (EST) to assess potential abandoned mine hazards in two broad impact categories (Technical and Socio-economic) and, in turn, weighs them against the following five criteria:

Socio-Economic: Social Impact; and
Economic Impact

Technical: Public Safety;
Public Health; and
Environmental Quality

A note of interest to inventory developers: Abandoned mine sites are *never* removed from the AMIS database. Sites are permanently flagged as potentially hazardous even once they have been fully rehabilitated (e.g. open shafts have been capped, toxic mine tailings have been neutralised, contained or relocated, etc.). In this sense, AMIS serves as an indelible record of historical and potential future site conditions. The potential for long term, mine related soil subsidence, for instance, persists long after more immediate hazards have been remedied.

In one case, a senior citizen's home outside Cobalt, Ontario, was cut-off from the town when an adjoining section of highway collapsed. The highway and senior citizens' home were built atop an abandoned mine. While the soil beneath the highway eventually subsided, detailed and costly investigations revealed that the crown pillar (the mine 'roof' as it were) was sufficiently thick *and* stable to support the home. The highway was diverted. This case is instructive for two reasons. First, the risk to public health could have been averted through careful historical analysis (such as a historical land use inventory) and, second, the nearly $1 million cost to the public purse could have been avoided.

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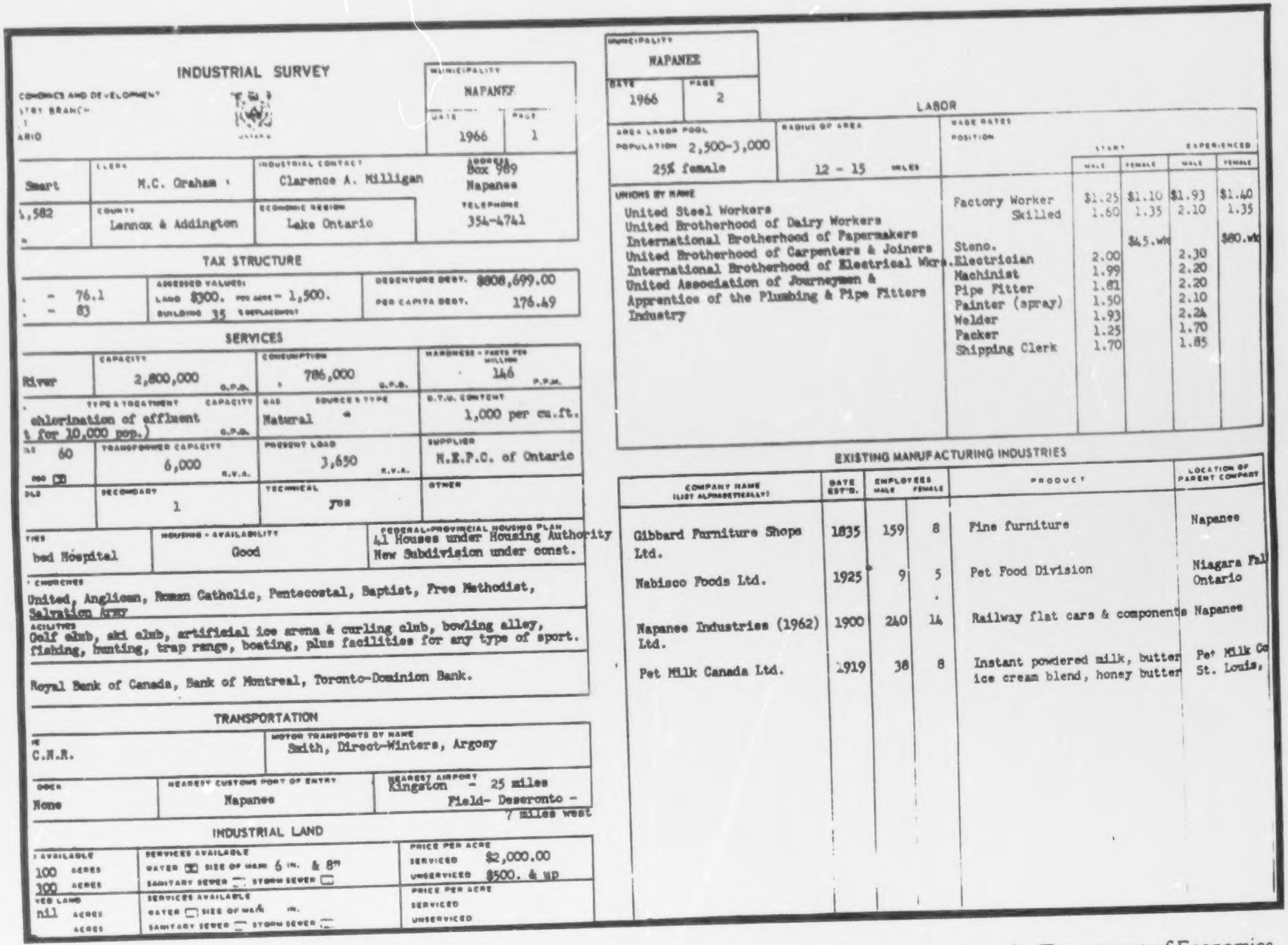
[57] Mike Charette, Abandoned Mines Officer, Mine Site Reclamation Section, Ministry of Northern Development and Mines, *Personal Communication*, October 21, 1994.
Bill Mackasey, Provincial Supervisor of Abandoned Mines, Mine Site Reclamation Section, Ministry of Northern Development and Mines. *Personal Communication*. July 13, 1995.

For further information about abandoned mines or the AMIS database, contact the resident geologist at any of the thirteen district offices of the Ministry of Northern Development and Mines or:

For more information:

Provincial Supervisor of Abandoned Mines
Mine Site Reclamation Section
Ministry of Northern Development and Mines
Willet Green Miller Centre
933 Ramsey Lake Road, 5th Floor
Sudbury, Ontario
P3E 6B5
(P)705-670-5805
(F)705-670-5816



INDUSTRIAL SURVEY

CONOMICS AND DEVELOPMENT
STRY BRANCH
ARIO

MUNICIPALITY	NAPANEE
DATE	1966
PAGE	1

Smart	CLERK M.C. Graham	INDUSTRIAL CONTACT Clarence A. Milligan	ADDRESS Box 989 Napanee
,582	COUNTY Lennox & Addington	ECONOMIC REGION Lake Ontario	TELEPHONE 354-4741

TAX STRUCTURE

. - 76.1 . - 83	ASSESSED VALUES: LAND $300. PER ACRE - 1,500. BUILDING 35 REPLACEMENT	DEBENTURE DEBT. $808,699.00 PER CAPITA DEBT. 176.49

SERVICES

River	CAPACITY 2,800,000 G.P.D.	CONSUMPTION 786,000 G.P.D.	HARDNESS - PARTS PER MILLION 146 P.P.M.
TYPE & TREATMENT chlorination of effluent t for 10,000 pop.)	CAPACITY G.P.D.	GAS SOURCE & TYPE Natural	B.T.U. CONTENT 1,000 per cu.ft.
60	TRANSFORMER CAPACITY 6,000 K.V.A.	PRESENT LOAD 3,650 K.V.A.	SUPPLIER H.E.P.C. of Ontario
	SECONDARY 1	TECHNICAL yes	OTHER

bed Hospital	HOUSING - AVAILABILITY Good	FEDERAL-PROVINCIAL HOUSING PLAN 41 Houses under Housing Authority New Subdivision under const.

CHURCHES
United, Anglican, Roman Catholic, Pentecostal, Baptist, Free Methodist, Salvation Army

ACILITIES
Golf club, ski club, artificial ice arena & curling club, bowling alley, fishing, hunting, trap range, boating, plus facilities for any type of sport.

Royal Bank of Canada, Bank of Montreal, Toronto-Dominion Bank.

TRANSPORTATION

C.N.R.	MOTOR TRANSPORTS BY NAME Smith, Direct-Winters, Argosy

DOCK None	NEAREST CUSTOMS PORT OF ENTRY Napanee	NEAREST AIRPORT Kingston - 25 miles Field- Deseronto - 7 miles west

INDUSTRIAL LAND

AVAILABLE 100 ACRES 300 ACRES	SERVICES AVAILABLE WATER ☒ SIZE OF MAIN 6 IN. & 8" SANITARY SEWER ☐ STORM SEWER ☐	PRICE PER ACRE SERVICED $2,000.00 UNSERVICED $500. & up
ED LAND nil ACRES ACRES	SERVICES AVAILABLE WATER ☐ SIZE OF MAIN IN. SANITARY SEWER ☐ STORM SEWER ☐	PRICE PER ACRE SERVICED UNSERVICED

MUNICIPALITY	NAPANEE
DATE	1966
PAGE	2

LABOR

AREA LABOR POOL POPULATION 2,500-3,000 25% female	RADIUS OF AREA 12 - 15 MILES

UNIONS BY NAME
United Steel Workers
United Brotherhood of Dairy Workers
International Brotherhood of Papermakers
United Brotherhood of Carpenters & Joiners
International Brotherhood of Electrical Wkrs.
United Association of Journeymen & Apprentice of the Plumbing & Pipe Fitters Industry

WAGE RATES

POSITION	START		EXPERIENCED	
	MALE	FEMALE	MALE	FEMALE
Factory Worker	$1.25	$1.10	$1.93	$1.40
Skilled	1.60	1.35	2.10	1.35
Steno.		$45.wk		$80.wk
Electrician	2.00		2.30	
Machinist	1.99		2.20	
Pipe Fitter	1.81		2.20	
Painter (spray)	1.50		2.10	
Welder	1.93		2.24	
Packer	1.25		1.70	
Shipping Clerk	1.70		1.85	

EXISTING MANUFACTURING INDUSTRIES

COMPANY NAME (LIST ALPHABETICALLY)	DATE EST'D.	EMPLOYEES		PRODUCT	LOCATION OF PARENT COMPANY
		MALE	FEMALE		
Gibbard Furniture Shops Ltd.	1835	159	8	Fine furniture	Napanee
Nabisco Foods Ltd.	1925	9	5	Pet Food Division	Niagara Fal Ontario
Napanee Industries (1962) Ltd.	1900	240	14	Railway flat cars & components	Napanee
Pet Milk Canada Ltd.	1919	38	8	Instant powdered milk, butter ice cream blend, honey butter	Pet Milk Co St. Louis,

Figure 10: An excerpt from the *Industrial Surveys of Ontario Municipalities (1966)* for Napanee, Ontario (Department of Economics and Development)[58].

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[58] Municipal Services Division, Trade and Industry Branch, *Industrial Surveys of Ontario Municipalities*, Department of Economics and Development 1966

County Histories, Historical Societies, Interviews

To celebrate their centenaries, many Ontario townships and counties published local histories which may contain valuable information for a historical land use inventory. The authors of local histories, either individuals or historical societies, are often invaluable information sources. Long term residents and current and former civic employees are also important contacts.

5.2.6 Other Sources

Title Searches

Land registries can be used to trace property ownership back to the first Crown land grants. A thorough title search ensures that all owners and activities on a given site are accounted for. However, to conduct title searches for each property in an industrial area would be prohibitively time consuming and costly. A single title search costs $5.00 and can take up to several hours, depending on the number of property owners and subdivisions. From time to time, inventory developers may selectively search titles to fill information gaps not covered by other sources. Land registry and land title offices operate under the authority of the Ministry of Consumer and Commercial Relations and are usually located in a community's central business district.

Ministry of Environment and Energy Certificates of Approval

Under the *Environmental Protection Act*, the Ministry of Environment and Energy must grant a certificate of approval for the construction or alteration of any commercial or industrial process which may cause contaminants to be discharged to the environment. Certificates of approval have been used since the early 1970's and may provide valuable information on the type and location of potentially contaminating activities. Historical land use inventory developers should check with the nearest district or regional office of the Ministry of Environment and Energy for further information about certificates of approval.

Industrial Adjustment Services

The Industrial Adjustment Services Division of Human Resources Development Canada collaborates with industry and employees to manage industrial expansion and development (80% of cases) or industrial layoffs, closures and bankruptcies (20% of cases). In either case, employers and employees voluntarily form a joint industrial committee to manage shifting industrial circumstances. In the latter case, industrial (or 'closure') committees are mandated to negotiate severance packages, counsel and resettle displaced industrial workers. All industrial committees develop a company profile comprised of a description of the company, sector, production capacity, number of employees, brand names, etc.—a catalogue of information which may be integral to the development of a historical land use inventory. Industrial reports which contain information on proprietary technology are released to the public subject to approval from the joint industrial committee. Industrial reports on defunct companies are generally available on request.

For more information:

Ontario Regional Office
Industrial Adjustment Services
Adjustment Programmes
Human Resources Development Canada
4900 Yonge Street
North York, Ontario
(P)416-224-4888
(F)416-954-7000

Statistics Canada Annual Reports

Statistics Canada published the *Historical Catalogue of Statistics Canada Publications, 1918-1980*[59] in 1982. The *Historical Catalogue* comprises a complete record of all Statistics Canada publications—including all Dominion Bureau of Statistics publications, the federal precursor to StatsCan.

Of special interest to historical land use inventory developers are the StatsCan annual reports produced for primary (resource extractive) and manufacturing industries. StatsCan annual reports listed company names and addresses province by province until the late 1960s when names and addresses were dropped to protect privacy.

With the exception of the Dominion Bureau of Statistics' *Chemical Directories*, information on the products and production capacity of individual companies is generally unavailable[60]. First published in 1918, *Chemical Directories* list the names, locations and products of companies manufacturing chemicals and allied products. *Chemical Directories* are an invaluable source of information for historical land use inventory developers.

Local Architectural Conservancy Advisory Committees (LACACs)

Governed by the *Ontario Heritage Act*, Local Architectural Conservancy Advisory Committees (LACACs) strive to catalogue, restore and protect Ontario's built heritage. This endeavour necessarily entails the creation of databases of Ontario's historical buildings. While LACACs are driven by fundamentally different objectives than historical land use inventory developers, they often use complimentary research sources and methodologies. Moreover, LACAC volunteers have considerable knowledge of local history and may provide historical land use inventory developers with valuable *unpublished* historical information about Ontario's buildings and sites.

Some of Ontario's 212 LACACs are interpreting the *Act* more widely to catalogue historical sites as well as buildings. In some areas (Richmond Hill, East Gwillimbury, the regional municipalities of Kitchener-Waterloo and Ottawa-Carleton) municipalities and/or local LACACs are developing Archaeological Master Plans. As well as including prehistoric aboriginal sites, some plans include early Euro-Canadian sites.

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[59] *Historical Catalogue of Statistics Canada Publications: 1918-1980*. Cat. # 11-512E. Ottawa: Queen's Printer, 1982.

[60] "Chemical Directories," in *Historical Catalogue of Statistics Canada Publications: 1918-1980*. (Publication number 46-501-503).

A list of Ontario LACACs is available from the Architectural Heritage Planning Unit, Ministry of Citizenship and Culture.

For more information:

Architectural Heritage Planning Unit
Cultural Programs Branch
Ministry of Citizenship, Culture and Recreation
77 Bloor Street West, 2nd Floor
Toronto, Ontario
M7A 2R9
(P)416-314-7080
(F)416-314-7175

Table 9: Summary of Information Sources and Locations	
Source	**Location**
Aerial Photographs	Northway Map Technology Limited 44 Upjohn Road Don Mills, Ontario M3B 2W1 (P)416-441-6025 (F)416-441-2432
	Natural Resources Information Centre Ministry of Natural Resources Macdonald Block, Room M1-73 900 Bay St. Toronto, Ontario M7A 2C1 (P)416-314-2000 (F)416-314-1593
	Archives of Ontario 77 Grenville Street Toronto, Ontario M7A 2R9 (P)416-327-1557 (F)416-327-1999
Provincial Inventories	Public Information Centre Ministry of Environment and Energy 135 Saint Clair Avenue West, 1st Floor Toronto, Ontario M4V 1P5 (P)416-323-4321 (P)800-565-4923 {Toll Free} (F)416-323-4564
Public Manifest and Generator Registration Information Data Set	Science and Technology Branch Ministry of Environment and Energy 2 Saint Clair Avenue West, 14th Floor Toronto, Ontario M4V 1L5 (P)416-323-5200 (F)416-323-5031
Underground Storage Tanks	Inspection Branch Technical Standards Division Ministry of Consumer and Commercial Relations

Table 9: Summary of Information Sources and Locations

Source	Location
	Mutual Group Centre, 3rd Floor 3300 Bloor Street West Etobicoke, Ontario M8X 2X4 (P)416-234-6000 (F)416-234-6101
Public Fire Insurance Plan Collections	Archivist Cartographic Records Collection Archives of Ontario 77 Grenville Street Toronto, Ontario M7A 2R9 (P)416-327-1557 (F)416-327-327-1999
	Map Area Researcher Services Division National Archives of Canada 395 Wellington Street, 3rd Floor Ottawa, Ontario K1A 0N3 (P)613-992-8188 (F)613-995-6274
Private Fire Insurance Plan Collections	Insurers' Advisory Organisation (1989), Inc. 18 King Street East, Suite 700 Toronto, Ontario M5C 1C4 (P)416-368-1801 (F)416-368-7703
Public Historical Atlas Collections	Map Room History Department Metropolitan Toronto Reference Library 789 Yonge Street Toronto, Ontario M4W 2G8 (P)416-393-7164 (F)416-393-7229
Human Resources Canada Industrial Closure Committee Reports	Industrial Adjustment Services Adjustment Programs Branch Human Resources Development Canada 4900 Yonge Street,

Table 9: Summary of Information Sources and Locations	
Source	**Location**
	North York, Ontario M2N 6A8 (P)416-954-7000 (F)416-954-7200
Local Architectural Conservancy Advisory Committees (LACACs)	Cultural Programs Branch Ministry of Citizenship, Culture and Recreation 77 Bloor Street West, 2nd Floor Toronto, Ontario M7A 2R9 (P)416-314-7080 (F)416-314-7175
Environmental Information	Mines and Mineral Information Centre Ministry of Northern Development and Mines 900 Bay Street, Room M2-17 Macdonald Block Toronto, Ontario M7A 1C3 (P)416-314-3790 (F)416-314-3797
	Natural Resources Information Centre Ministry of Natural Resources Macdonald Block, Room M1-73 900 Bay Street Toronto, Ontario M7A 2C1 (P)416-314-2000 (F)416-314-1593

6.0 STEP FOUR: OPERATE AND MAINTAIN AN INVENTORY

6.1 Public Use of an Inventory and Municipal Liability

Given the potential for liability, a disclaimer should be issued at the outset of any response to a public inquiry about information contained in a municipal historical land use inventory. Disclaimers are most effective when they disclose why it is unreasonable to rely on information rather than merely asserting that liability is rejected. Further, disclaimers are not effective in cases where it can be reasonably maintained that they are not read. Members of the public should be required to read and sign a disclaimer at the outset of a public request for information. An example of a disclaimer used by the City of Toronto (in its written replies) is attached as Appendix E. Inventory developers should consult their municipal solicitor to formulate a disclaimer and a policy for public access to an inventory.

6.2 Maintenance

The accuracy and completeness of a historical land use inventory depends on regular maintenance to reflect changes in site use and conditions. Indeed, the most comprehensive and methodically constructed inventories require frequent updates. For instance, site references may be modified, or altogether withdrawn from an inventory, once a site is redeveloped though withdrawal is not recommended (see Chapter 5 under Abandoned Pits, Mines and Quarries). As neighbouring site conditions change, so may the potential for environmental impact. A municipality may expand the scope of an inventory to include a host of other environmental conditions (e.g. soil stability, flood plains, etc.).

Since land use and environmental conditions are fundamentally dynamic, municipalities should undertake a programme of regular inventory maintenance to ensure the ongoing viability and accuracy of inventory data. Inventory maintenance may be financed through user fees. Wherever possible, relevant municipal departments should apprise inventory managers of material changes in site use and conditions in the subject area (e.g. building departments should notify inventory managers of building and demolition permits, zoning and official plan amendments, etc.).

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APPENDICES

Appendix A:

Development and Presentation of a Historical Land Use Inventory

Introduction

The following example focuses on a two block section of a former industrial area in downtown Toronto to illustrate research methods used in the development of a historical land use inventory. The following sample historical land use inventory is a simple table with six columns of information. Although the information presented is based on specific research conducted in the preparation of this guide, the following sample format is based on the *Historical Land Use Database* developed by the City of Toronto's Environmental Protection Office. Addresses are drawn from the 1993 City of Toronto property map (see Figure A-1). Rather than list all street numbers for a single site, the highest and lowest street numbers in a range are shown.

Table A-1. Example of a Simple Table Inventory[61]

Street Number	Street Name	Years	Company Name	Activity	SIC Code
424	Cherry				
434	Cherry				
281	Front E.				
401	Front E.				
42	Mill				
90	Mill				
43	Parliament				
43A	Parliament				
018	Trinity				
65	Trinity				

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[61] Environmental Protection Office, Department of Public Health, City of Toronto. *Historical Land Use Database (Draft)*. May, 1991.

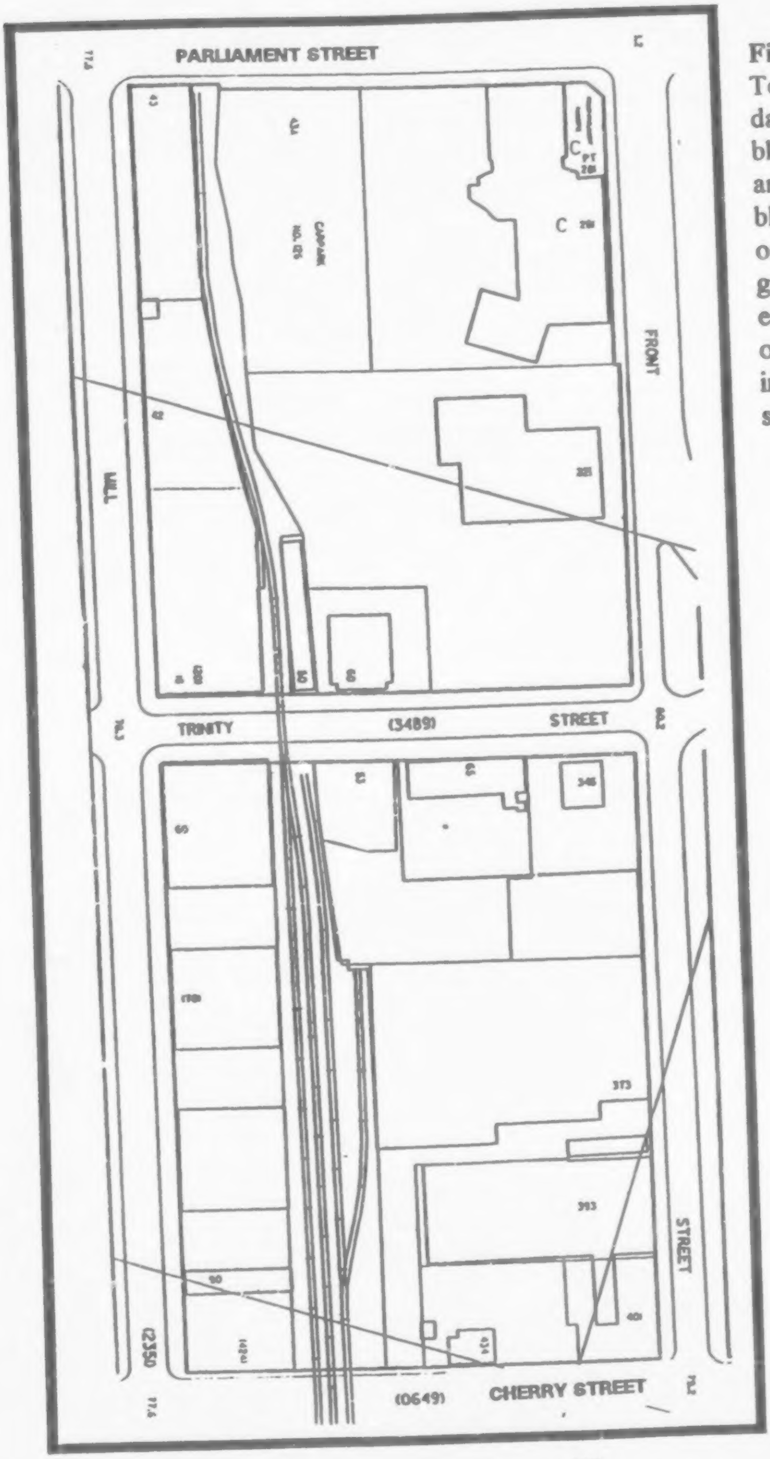
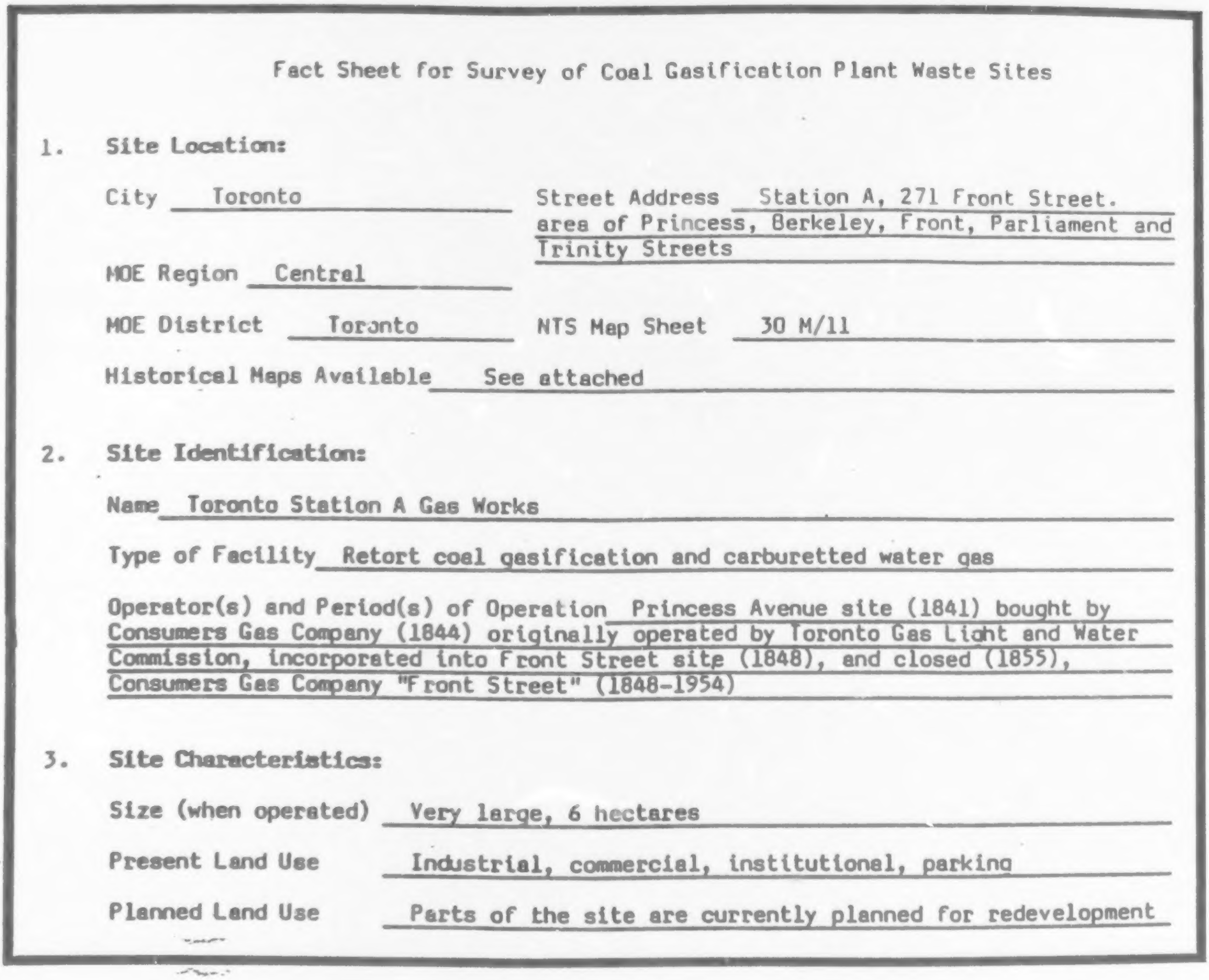

PARLIAMENT STREET
FRONT
MILL
TRINITY
(3489)
STREET
321
345
373
393
STREET
(2350
(0649)
CHERRY STREET

Figure A-1: City of Toronto 1991 property data map for two blocks of example area. The western block was once occupied by a coal gasification plant. The eastern block has been occupied by light industrial activities and scrap yards.



Fact Sheet for Survey of Coal Gasification Plant Waste Sites

1. **Site Location:**

City Toronto

Street Address Station A, 271 Front Street. area of Princess, Berkeley, Front, Parliament and Trinity Streets

MOE Region Central

MOE District Toronto

NTS Map Sheet 30 M/11

Historical Maps Available See attached

2. **Site Identification:**

Name Toronto Station A Gas Works

Type of Facility Retort coal gasification and carburetted water gas

Operator(s) and Period(s) of Operation Princess Avenue site (1841) bought by Consumers Gas Company (1844) originally operated by Toronto Gas Light and Water Commission, incorporated into Front Street site (1848), and closed (1855), Consumers Gas Company "Front Street" (1848-1954)

3. **Site Characteristics:**

Size (when operated) Very large, 6 hectares

Present Land Use Industrial, commercial, institutional, parking

Planned Land Use Parts of the site are currently planned for redevelopment

Figure A-2: Example of information provided for the example area by the Inventory of Coal Gasification Plant Waste Sites in Ontario, Volume II

Provincial Inventories

The Ministry of Environment and Energy's *Inventory of Industrial Sites Producing and Using Coal Tar and Related Tars in Ontario* indicates a coal gasification plant was situated at 217 Front Street East. While the coal plant site is outside the range of addresses shown in the table, the *Inventory* includes a reference to a fire insurance plan which shows that the plant occupied most of the western block of the example—i.e. the coal plant site actually incorporated 281 to 381 Front Street East (see Table A-2).

In this case, a single information source covers one half of the subject area for 103 years and yielded the information shown in Table A-2. This is a representative example of the importance of provincial inventories and the amount of information municipalities may extract for an inventory.

Table A-2. Information from Provincial Inventories

Street Number	Street Name	Years	Company Name	Activity	SIC Code
281	Front E.	1841 - 1954	Consumers Gas Co. Station A	Coal gasification	369
321	Front E.	1841 - 1954	Consumers Gas Co. Station A	Coal gasification	369
43	Parliament	1841 - 1954	Consumers Gas Co. Station A	Coal gasification	369
43A	Parliament	1841 - 1954	Consumers Gas Co. Station A	Coal gasification	369
40	Trinity	1841 - 1954	Consumers Gas Co. Station A	Coal gasification	369
50	Trinity	1841 - 1954	Consumers Gas Co. Station A	Coal gasification	369
60	Trinity	1841 - 1954	Consumers Gas Co. Station A	Coal gasification	369

Fire Insurance Plans and Historical Maps

Maps from fire insurance plans, land use atlases and the *County of York Illustrated Historical Atlas (1878)* are shown in Figures A-3 to A-8. A map detail from the *City of Toronto Historical Atlas (1878)* (Figure A-3) shows gasometers and three large buildings on the Gas Works site on the western block of Front Street East. Land use atlas maps show the development of the sample area from 1884 to 1923. In this case, land use maps and the historical atlas did little to identify land uses or industrial activities in the area. Land use maps typically provide names and activities for large facilities such as Consumers Gas, but do not mention smaller facilities. However, these sources provide inventory developers with a visual reference of an area during a particular historical period—a valuable aid when used in conjunction with directories and other sources.

The available fire insurance plans for this area are (1) a set of 1955 plans updated to 1964, (2) a set from 1917 and (3) a set from 1880 updated to 1892. Maps from 1917 are available on microfilm only and are not reproduced here. The fire insurance plans provide names and activities of large and small facilities and are reproduced with the permission of the Insurers' Advisory Organisation (1989), Inc. All information contained in Table A-3 was extracted from the 1917 and 1964 maps.

Table A-3. Information from Fire Insurance Plans

Street Number	Street Name	Years	Company Name	Activity	SIC Code
434	Cherry		Leaside Metal Co.	Other Waste Materials	5919
345	Front E.	1955-1965	Gasol Service Station	Gasoline Service Station	6331
		1917	Dwellings		
373	Front E.	1955-1965	Drummond and McCall Co. Ltd.	Iron and Steel Storage Shed	4799
		1917	Drummond and McCall Co. Ltd.	Iron and Steel Storage Shed	4799
393	Front E.	1955-1965	Hydro-Electric Transformer Station		
		1917	Hydro-Electric Transformer Station		
401	Front E.	1955-1965	Gasoline Service Station	Gasoline Service Station	6331
		1917	Junk Yard	Other Waste Material	5919
60	Mill	1955-1965	Gooderham and Worts Rack House "D"	Distillery Products	1121
		1917	Gooderham and Worts Rack Warehouse "D"	Distillery Products	1121

Street Number	Street Name	Years	Company Name	Activity	SIC Code
70	Mill	1955-1965	Gooderham and Worts Rack House "I"	Distillery Products	1121
		1917	Gooderham and Worts Tank House 14	Distillery Products	1121
90	Mill	1955-1965	Leaside Metal Co.	Other Waste Materials	5919
		1917	Emergency Hospital	Other Specialty Hospitals	8619
43	Parliament	1955-1965	Brown and Co. Tomato Processing and Packaging	Fruit Processing	1031
		1917	Railway Spur	Railway Transport	531
18	Trinity	1955-1965	York Salvage Ltd.	Waste Paper Bailing and Storage	27
		1917	Storage	Under Construction	
65	Trinity	1955-1965	Vacant		
		1917	Garage and Auto Repairs	Garages	6351

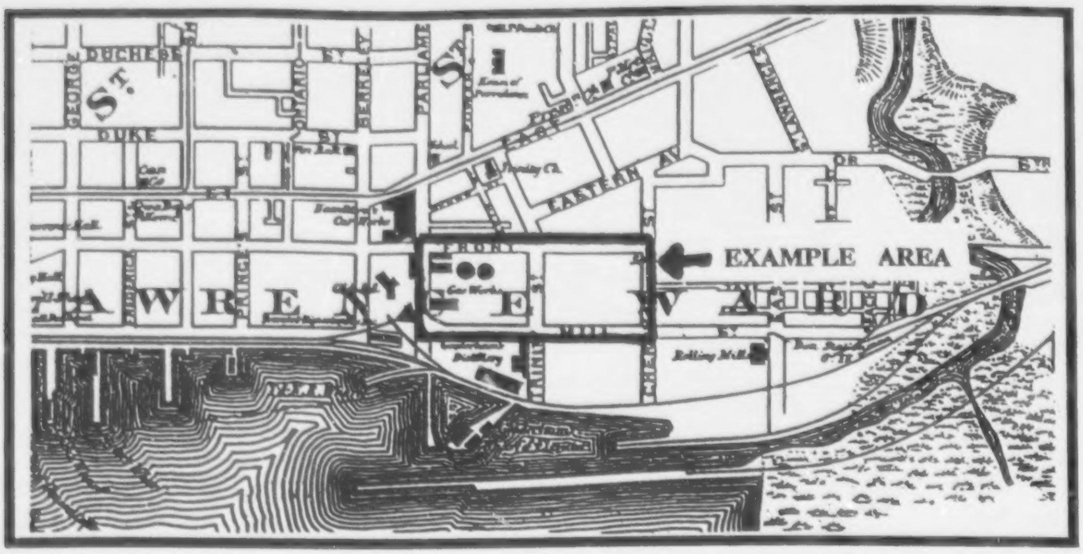

DUCHESS
DUKE
GEORGE
ST.
ONTARIO
BERKELEY
PARLIAMENT
FRONT
EASTERN AV
EXAMPLE AREA
LAWRENCE WARD
MILL
TRINITY
CHERRY
Car Works
Rolling Mills

Figure A-3 Sample area from the *Illustrated Historical Atlas of York County, Ontario (1878)*. Miles & Co., 1878. Reprinted by Mika Silk Screening Limited, Belleville, Ontario, 1972.

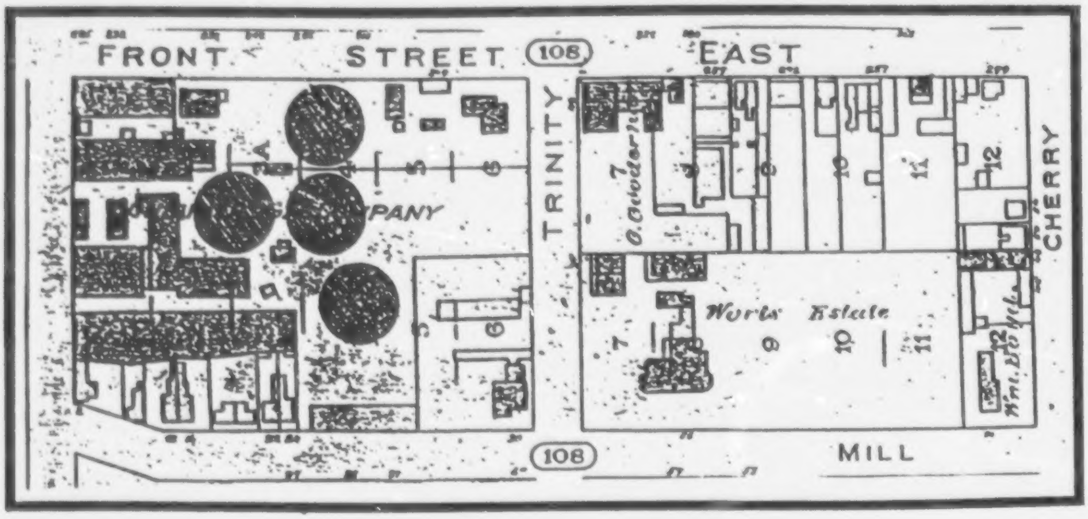

FRONT STREET EAST
108
TRINITY
CHERRY
PANY
Works Estate
MILL
108

Figure A-4. Excerpt from Chas. E. Goad, *Atlas of the City of Toronto and Suburbs*, Plate 29, 1888.

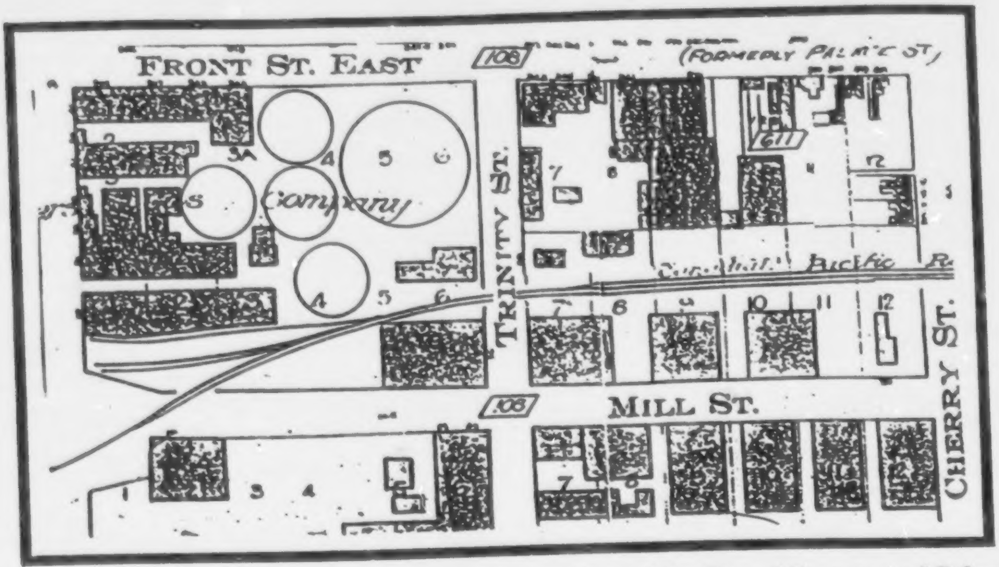

FRONT ST. EAST
106
(FORMERLY PALACE ST)
Company
611
TRINITY ST.
Canadian Pacific R.
MILL ST.
106
CHERRY ST.

Figure A-5. Excerpt from Goad's Atlas & Plan Co., *Atlas of the City of Toronto and Suburbs*. 3rd ed., Plate 29, 1923.

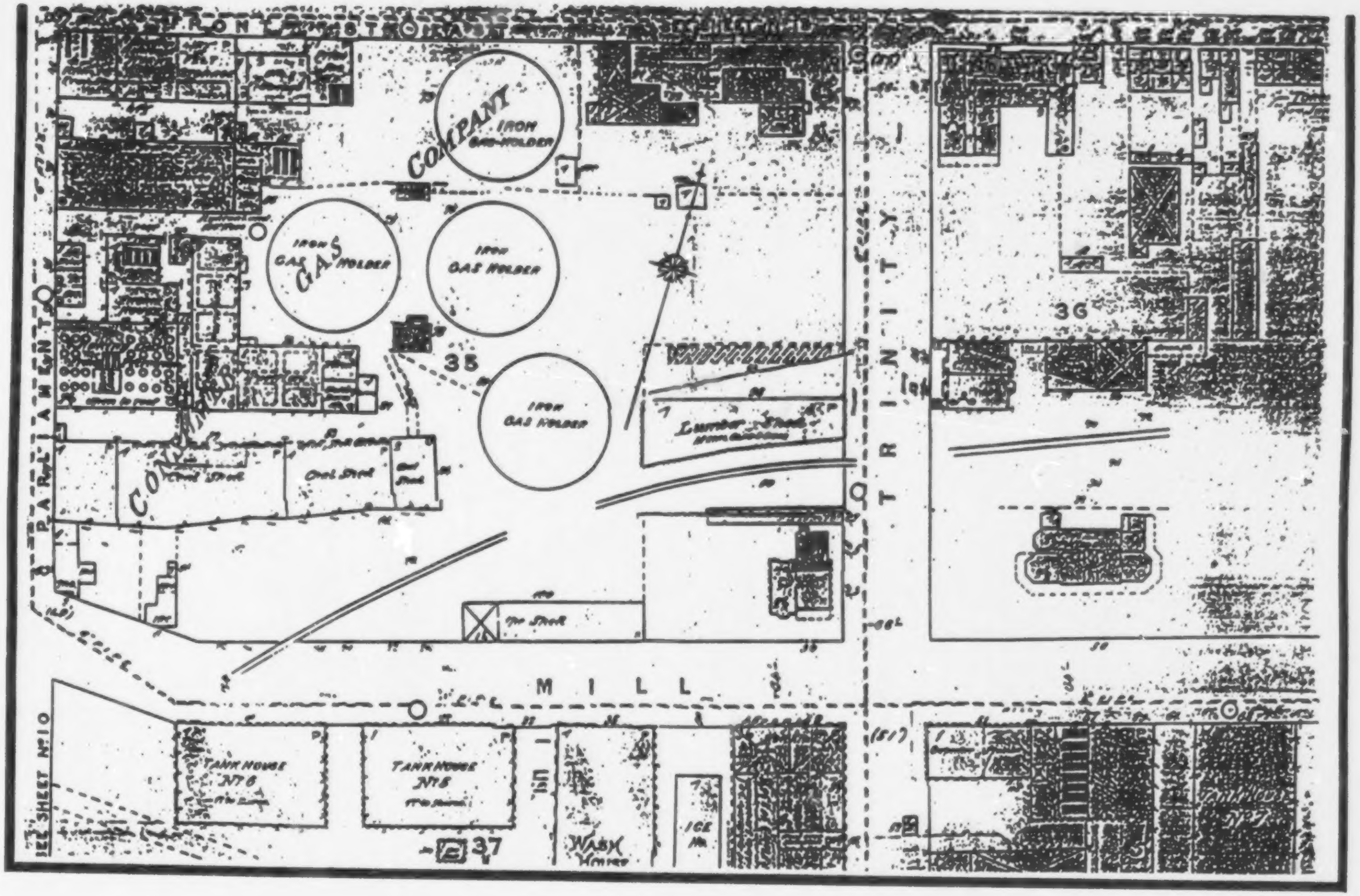

PARLIAMENT
TRINITY
MILL
COMPANY
GAS
IRON GAS-HOLDER
IRON GAS HOLDER
IRON GAS HOLDER
IRON GAS HOLDER
35
36
37
Lumber Shed
Coal Shed
Coal Shed
TANK HOUSE No 6
TANK HOUSE No 5
ICE
WASH House
SEE SHEET No 10

Figure A-6. The example area from the 1892 fire insurance plan (From Chas. E. Goad, 1892. Insurance Plan of the City of Toronto, Ontario. Volume I, Plate 11). Reproduced with the permission of Insurers Advisory Organization (1989) Inc. copyright holders of the Plans/Maps.

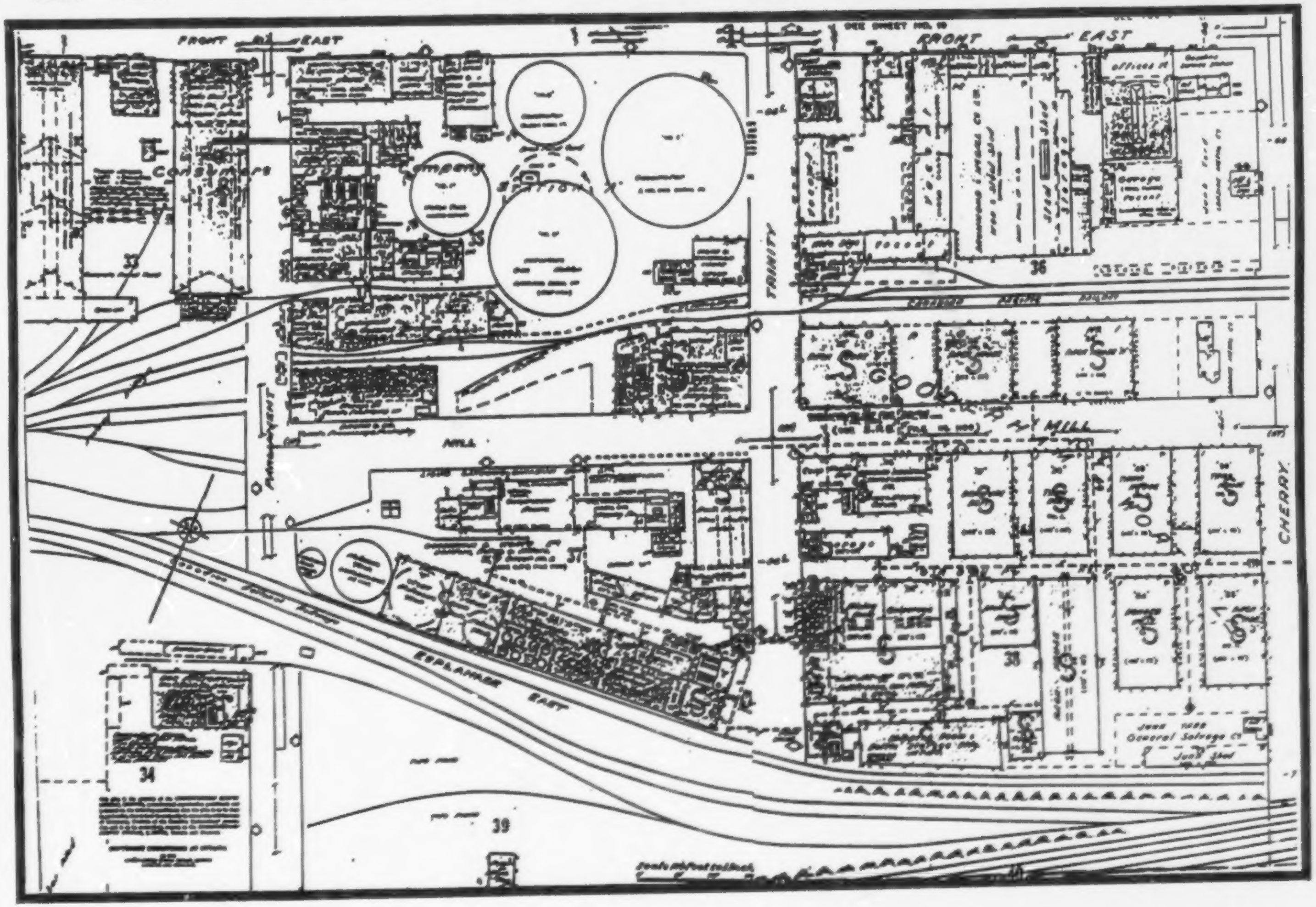

FRONT
EAST
FRONT
EAST
TRINITY
MILL
CHERRY
PARLIAMENT
ESPLANADE EAST
General Salvage Co
Junk Shed
33
34
35
36
37
38
39

Figure A-7. The example are from the 1964 fire insurance plan (From Underwriters' Survey Bureau Ltd., 1964. Insurance Plan of the City of Toronto, Volume 1. Plan dated July 1954, partially revised to January, 1964. Plates 10 and 11). Reproduced with the permission of Insurers Advisory Organization (1989) Inc. copyright holders of the Plans/Maps.

Might's City Directories of Toronto were examined every 5 years to compile Table A-4. Intervening years were examined when a land use change occurred in order to determine the year the change took place. Directories provided the greatest amount of information giving a more detailed history of land use than any other source. Where 'No Record' appears in the 'Company Name' column, the address was not listed in the directory for the year or period in question.

Table A-4. Information from City Directories

Street Number	Street Name	Years	Company Name	Activity	SIC Code
424	Cherry	1950-1992	Cherry Mill Iron and Metal Co.	Scrap Metal	5919
		1938-1950	Mealing & Mackay Coal Co.	Coal Products	3699
		1880	Residence		
434	Cherry	1920-1993	Wolfe and Son Iron and Metal	Scrap Metal	5919
		1880	Residence		
281	Front E.	1993	No Record		
		1988	Under construction		
321	Front E.	1988-1992	Toronto Chrysler Car Dealership	Car Dealership	6311
		1967-1985	Bell Canada Garage	Garage	6351
		1964-1965	No Record		
		1919-1963	Consumers Gas Storage	Warehouse	4799
		1870-1915	Consumers Gas Works	Coal Gasification	369
345	Front E.	1992	No Record		
		1981-1988	Aulde Auto Car Shoppe		6351
		1977-1980	Griffen Auto Repair		6351

Street Number	Street Name	Years	Company Name	Activity	SIC Code
		1934-1976	Gas Station	Gasoline Service Station	6331
		1933-1934	No Record		
		1929	Residence		
373	Front E.	1961-1992	Gift Craft	Toys & Novelties	3932
		1958-1960	Modern Standard Tool Company	Machinery	3081
		1913-1957	Drummond & McColl		3061
		1911	Residence		
393	Front E.	1988-1992	Street City Housing	Housing for homeless	
		1973-1988	Postal Division Transportation		
		1957-1972	Bacon Cartage		4569
		1955-1956	Vacant		
		1949-1954	Brewers Warehouse	Warehouse	4799
		1947-1948	Hardy Cartage		4569
		1945-1946	No Record		
		1944	Residence		
401	Front E.	1968-1992	Wolfe Iron & Steel	Scrap Yard	5919
		1967	Motor Sales		6359
		1936-1962	Gas Station	Gasoline Service Station	6331

Street Number	Street Name	Years	Company Name	Activity	SIC Code
		1898-1936	Junk Yard	Other Waste Materials	5919
		1880	Residence		
42	Mill	1943-1988	Mill Paper	Paper	27
		1939-1943	Howell Lithographic Warehouse	Warehouse	4799
60	Mill	1949-1992	Canadian Excise Bonded Warehouse	Warehouse	4799
		pre-1948	No Record		
70	Mill	1949-1992	Canadian Excise Bonded Warehouse	Warehouse	4799
		pre-1948	No Record		
90	Mill	1969-1992	Cherry Mill Scrap Metal	Scrap Metal	5919
		1930-1969	No Record		
		1910	Residence		
43	Parliament	1953-1992	Dalmar Foods	Food Processing	10
		pre-1952	No Record		
43A	Parliament	1992	Vacant		
		1977-1988	Alpine Foods	Food Processing	10
		pre-1976	No Record		
47	Parliament	1963-1992	No Record		
		1870-1962	Consumers Gas Co.	Time Office	
18	Trinity	1992	Vacant		

Street Number	Street Name	Years	Company Name	Activity	SIC Code
		1942-1988	Mill Paper Fibres	Paper	27
		1941	Vacant		
		1937-1940	CKCL Broadcast Transmitter		
		1934-1937	Canadian Barrel and Bottle	Primary Glass and Glass Containers Industry	3561
		pre-1934	No Record		
20	Trinity	1992	Vacant		
		1944-1988	Mill Paper	Paper	27
		1942-1943	Vacant		
		1929-1941	Schofield Donald Chemicals / Raymond Oil	Chemicals	371
		1920-1929	Dominion Batteries	Batteries	3391
		pre-1929	No Record		
50	Trinity	1992	Vacant		
		1988-?	Canadian American Oil Service Co.		27
		1975-1986	No Record		
		1973-1974	Wholesale Fruit Products	Fruit Processing	10
		1970-1972	Price Stanley Consumer Products		
		1968-1969	Warehouse	Warehouse	4799

Street Number	Street Name	Years	Company Name	Activity	SIC Code
		1957-1967	Belick and Naiman Wool Storage	Warehouse	4799
		1950-1956	Canadian Controllers Ltd.	Warehouse	4799
		pre-1949	No Record		
53	Trinity	1974-1992	No Record		
		1929-1973	Hoffman Bros., Belick & Naimen, Price Stanley	Hides and wool (wool-pullers)	1821
		1924-1928	Vacant		
		1923	Residence		
65	Trinity	1988-1992	Vacant or no return		
		1981-1986	Tap Scenic Studios		
		1975-1980	No Record		
		1968-1974	Price Stanley, Downtown Storage	Warehouse	4799
		1957-1967	Warehouse	Warehouse	4799
		1950-1956	Brewers Warehouse	Warehouse	4799
		1933-1949	Cartage Co.		4569
		1928-1929	Vacant		
		1924-1927	Sess Oil Burners	Manufacturers of oil burners	3071
		1923	Reliable Washerless Tap and Valve		

Street Number	Street Name	Years	Company Name	Activity	SIC Code
		1922	Advertising Scales		
		1920	Residence		

The Canadian Manufacturers' Association *Canadian Trade Index (CTI)*

The *Canadian Trade Index* (CTI) can provide information about activities or products that may not be available from fire insurance plans or directories. For example, the nature of the activity of Drummond and McColl Co., Ltd., which occupied 373 Front Street East for 41 years (1917 to 1958), was not revealed in fire insurance plans or directories. According to the CTI though, the company manufactured slings, hooks, anchors, chains and shackles.

Table A-6. Information from *Canadian Trade Indexes*

Street Number	Street Name	Years	Company Name	Activity	SIC Code
359-373	Front E.	1945	Drummond & McColl	Slings, hooks, anchors, chains & shackles	3699
295 & 297	Front E.	1911	Michigan Ammonia Works of Detroit	Anhydrous ammonia, ammonia liquor	3711
50	Trinity	1955	Canadian Controllers Ltd.	Warehouse	4799
18	Trinity	1945	Howell's Warehouse	Lithographic	4799
20	Trinity	1924	Dominion Battery Co., Ltd.	Batteries	3391
53	Trinity	1945	Hoffman Bros. Wool Dealers	Wool Pullers	1829
57-65	Trinity	1924	Sess Oil Burners of Canada	Oil burning apparatus	3071

Final Sample Inventory

Table A-7 is the final compilation of all historical sources. The table is a *historical land use* type of inventory and can be used as a table or entered into an electronic database to allow electronic searches. In summary, at the beginning of the 20th century the sample area was characterised by a mix of residential and industrial land uses including a Consumers Gas coal gas plant on the western block and the Gooderham and Worts distillery south of Mill Street.

With the expansion of the railway in the early 1900's, the houses of the eastern block were replaced by a variety of light industrial activities. After World War II, many buildings which housed light industrial activities were converted into garages and warehouses. In 1954 the coal gas plant on the western block closed and was eventually dismantled. Today the western block is occupied by the Metropolitan Toronto Library and Administration Centre, a car dealership, a car park, empty warehouses and the head office of a food company. The eastern block is occupied by two scrap metal dealers, a toy and gift manufacturer, a shelter for homeless people, empty buildings and warehouses.

Table A-7 has address and date columns which indicate the address and initial year of operation for a particular land use[62]. For example, the first row indicates that 424 Cherry Street was occupied by a residence from 1880 to 1938 at which time the residence was replaced by a coal storage company. From 1950 to the present, the property has been occupied by a scrap metal company.

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[62] Yuan, Pingnan. *A Report on the Tasks for the Historical Land Use Database.* Report prepared for the Environmental Protection Office, Department of Public Health, City of Toronto, October 10, 1991.

Table A-7. Example of Inventory: Final Compilation

Address	Years	Company Name	Activity	SIC Code
424 Cherry	1993	Cherry Mill Iron and Metal Co.	Scrap Metal	5919
	1950	Cherry Mill Iron and Metal Co.	Scrap Metal	5919
	1938	Mealing and Mackay Coal Co.	Coal Products	3699
	1880	Residence		
434 Cherry	1993	Wolfe and Son Iron and Metal	Scrap Metal	5919
	1920	Wolfe and Son Iron and Metal	Scrap Metal	5919
	1880	Residence		
281 Front E.	1993	Toronto Public Library Administration/ Service Centre	Administration	8541
	1988	Library Admin. under construction		
	1954	Vacant		
	1911	Michigan Ammonia Works of Detroit	Anhydrous ammonia, Ammonia liquor	3711
	1841	Consumers Gas Co. Station A	Coal Gasification	369
321 Front E.	1993	Toronto Dodge Chrysler Car Dealership	Car Dealership	6311
	1967	Bell Canada Garage	Garage	6351
	1965	No Record		
	1919	Consumers Gas	Warehouse	4799

Address	Years	Company Name	Activity	SIC Code
	1889	Michigan Ammonia Co.	Anhydrous ammonia, ammonia liquor	3711
	1878	Residence of Consumers Gas manager		
	1841	Consumers Gas Co. Station A	Goal Gasification	369
345 Front E.	1993	Vacant	Abandoned garage	
	1989	Vacant		
	1981	Aulde Auto Car Shoppe	Auto repair	6351
	1977	Griffen Auto Repair	Auto repair	6351
	1934	Gas Station	Gasoline Service Station	6331
	1933	No Record		
	1929	Residence		
373 Front E.	1993	Gift Craft	Manufacturer of toys & novelties	3932
	1961	Gift Craft		3932
	1958	Modern Standard Tool Company	Machinery	3081
	1917	Drummond & McCall	Slings, chains, shackles, hooks, anchors	3061
	1911	Residence		
393A Front E.	1965	Transformer Station	Located on western side of building at 393	
	1917	Transformer Station		
393 Front E.	1993	Street City Housing	Homes for homeless	
	1988	Street City Housing		

Address	Years	Company Name	Activity	SIC Code
	1973	Postal Division Transportation		
	1957	Bacon Cartage	Other Truck Transport Industry	4569
	1955	Vacant		
	1949	Brewers Warehouse	Warehouse	4799
	1947	Hardy Cartage	Other Truck Transport Industry	4569
	1945	No Record		
	1941	Residence		
401 Front E.	1993	Wolfe Iron & Steel	Scrap Metal	5919
	1968	Wolfe Iron & Steel	Scrap Metal	5919
	1967	Motor Sales	Other Motor Vehicle Repair Shops	6359
	1963	Vacant		
	1936	Gasoline Service Station	Gasoline Service Station	6331
	1917	Junk Yard	Scrap Metal	5919
	1910	Residence		
42 Mill	1992	Vacant		
	1988	Vacant		
	1965	York Salvage Ltd.	Waste Paper Bailing and Storage	4799
	1943	Mill Paper	Paper	27
	1939	Howell Lithographic Warehouse	Warehouse	4799
	1938	Railway Spur		
60 Mill	1993	Vacant	Heritage Building: Gooderham & Worts #42	

Address	Years	Company Name	Activity	SIC Code
	1903	Gooderham and Worts Rack House	Distillery Products	1121
	1903	Worts Estate		
70 Mill	1993	Canadian Excise Bonded Warehouse	Warehouse	4799
	1948	Canadian Excise Bonded Warehouse	Warehouse	4799
	1903	Gooderham and Worts Rack House	Distillery Products	1121
	1903	Worts Estate		
90 Mill	1993	Cherry Mill Scrap Metals	Scrap Metal	5919
	1955	Leaside Metal Co.	Scrap Metal	5919
	1930	Vacant		
	1910	Residence		
43 Parliament	1993	Dalmar Foods	Head Office	10
	1977	Dalmar Foods	Head Office	10
	1952	Brown and Co. Tomato Processing and Packaging	Fruit Processing	1031
	1951	Railway Spur	Railway Transport	4531
43A Parliament	1992	Car park	Parking	999
	1988	Vacant	Vacant	
	1977	Alpine Foods	Food Processing	10
	1954	Vacant		
	1841	Consumers Gas Co Station A	Coal Gasification	369
18 Trinity	1993	Vacant		
	1988	Vacant		
	1942	Mill Paper Fibres	Paper	27

Address	Years	Company Name	Activity	SIC Code
	1955	York Salvage Ltd.	Waste Paper Bailing and Storage	27
	1941	Vacant		
	1937	CKCL Broadcast Transmitter		
	1934	Canadian Barrel and Bottle	Primary Glass and Glass containers Industry	3561
	1929	Schofield Donald Chemicals	Chemicals	371
	1920	Dominion Batteries	Batteries	3391
	1880	Gooderham and Worts Estates		
50 Trinity	1992	Vacant		
	1988	Canadian American Oil Service Co.		
	1975	No Record		
	1973	Wholesale Fruit Products	Fruit Processing	1031
	1970	Price Stanley Consumer Products		
	1968	Warehouse	Warehouse	4799
	1957	Belick and Naiman Wool Storage	Warehouse	4799
	1950	Canadian Controllers Ltd.	Warehouse	4799
	1841	Consumers Gas Co. Station A	Coal Gasification	369
53 Trinity	1993	Vacant	Car park for Toronto Dodge Chrysler	999
	1974	No Record		

Address	Years	Company Name	Activity	SIC Code
	1929	Hoffman Bros. Wool Dealers	Hides and wool, wool pullers	1821
	1924	Vacant		
	1923	Residence		
65 Trinity	1993	Vacant	Car park for Toronto Dodge Chrysler	999
	1988	Vacant		
	1981	Tap Scenic Studios		
	1975	No Record		
	1968	Price Stanley Downtown Storage	Warehouse	4799
	1957	Warehouse	Warehouse	4799
	1950	Brewers Warehouse	Warehouse	4799
	1933	Cartage Co.	Garage	6351
	1924	Sess Oil Burners	Manufacturers of oil burners	3071
	1917	Garage and Auto Repairs	Garages	6351

Appendix B:

List Of Coal Gasification Plant Waste Sites In Ontario: 1840-1970

LIST OF COAL GASIFICATION PLANT WASTE SITES IN ONTARIO[63]

COMMUNITY	ADDRESS	APPROXIMATE YEARS OF OPERATION
Barrie	17-31 Kempenfelt Dr.	1878-1939
Belleville	110-118 Church St.	1854-1947
Brampton	Northeast corner of Nelson St. and George St.	1888-1917
Brantford	East Ave. bounded by Alfred, Newport, East and Colborne Sts.	1860-1911
Brockville	40 St. Paul St. bounded by Grand River and opposite Simcoe St.	1887-1911
Cambridge(Galt)	140 North Water St.	1887-1911
Chatham	307 King St. W.	1873-1929
Cobourg	Between Queen and Charles Sts. west of McGill St. and east of Division St.	1857-1937
Cornwall	S.W. corner Water St. E and Amelia St.	1882-1929
Deseronto	South side of Main Street between First - Second St.	1886-1920
Dundas	43 Cootes Dr. on E. Side of Thorpe and King St. E.	1863-1909
Guelph	118-124 Fountain St.	1871-1957
Hamilton	1. N. and S. of Mulberry St. between Bay North & Park North St. 2. Hamilton By-Product Coke Ovens, Burlington-Industrial Depew St. area.	1850-1925 1924-1958
Ingersoll	83 Avonlea St.	1876-1915
Kingston	Bounding blocks, Place D'Armes Ontario, Queen, and Barrack Sts.	1848-1957
Kitchener	Gaukel St. bounded by Joseph and Charles Sts.	1882-1958

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[63] Intera Technologies, Ltd. *Inventory of Coal Gasification Plant Waste Sites in Ontario (Vols. I & II)*. Report Prepared for the Ontario Ministry of the Environment. April, 1987.

COMMUNITY	ADDRESS	APPROXIMATE YEARS OF OPERATION
Lindsay	66 William St.	1881-1915
Listowel	46 Elma St.	1891-1915
London	Area bounded by Thames, Horton, Simcoe, Bathurst and Ridout Sts.	1853-1939
Napanee	96 Water St.	1880-1921
Oshawa	1. West corner of Centre and Bond Sts. 2. 80 Emma St. at CN Railway Line	1903-1928 1901-1954
Ottawa	1. S.W. corner of York and King Edward Sts. 2. 175 Lees Ave.	1854-1915 1920-1957
Owen Sound	1141-1145 First Ave. E.	1888-1947
Peterborough	N. side of Simcoe St. between Queen St. and Railway Line, adjacent to Otonabee River	1869-1950
Port Hope	70-80 John St.	1859-1938
Port Stanley	Carlow Road bounded by Marr. Rd., Carlow Rd, Lake Rd, and George St.	1945-1958
St. Catherines	S. of Gale Crescent, bottom of Calvin St., beside Old Welland Canal.	1853-1928
St. Thomas	Corner of Mondamin and Gas Sts.	1877-1935
Sarnia	Maxwell St. bounded by Maxwell, Water, Front Sts. and Railway tracks	1884-1909
Sault Ste. Marie	Goulais Ave. bounded by Bonney, Baseline, Pittsburgh and Goulais Sts.	1925-1963
Simcoe	S.E. corner of Pond and Water Sts.	1891-1910
Stratford	Wellington St., bounded by St. Patrick, Nelson, St. David and Erie Sts.	1879-1953

COMMUNITY	ADDRESS	APPROXIMATE YEARS OF OPERATION
Toronto	1. Station A, 271 Front Street area of Princess, Berkeley, Front, Parliament and Trinity Sts.	1841-1954
	2. 415 Eastern Ave., N.E. corner of Booth St. and Eastern Ave.	1909-1954
	3. 28 Bathurst St., N.W. corner of Bathurst St. and Front St. W.	1909-1954
Waterloo	E. side of Regina St. and W. side of William St., S. of Laurel Creek	1889-1957
Windsor	S. of McDougall Ave. opposite the S.W. extension of Brant St.	1871-1930
Woodstock	Young St. bounded by Young, Peel, Burtch Sts. and an open area	1876-1919

Appendix C:

List of Industrial Sites Producing and Using Coal Tar and Related Tars in Ontario

LIST OF INDUSTRIAL SITES PRODUCING AND USING COAL TAR AND RELATED TARS IN ONTARIO[64]

COMMUNITY	COMPANY	ADDRESS	YEARS OF OPERATION
COAL TAR DISTILLATION PLANTS			
Hamilton	Currie Products	350 Wentworth St. N	1978-present
Hamilton	Dominion Tar and Ammonia Hamilton Tar and Ammonia Hamilton Tar Products Currie Products	East side Caroline between Mulberry & Sheaffe Sts.	1901-1977
Hamilton	Dominion Tar & Chemical, Domtar Chemicals	West side Strathearne Ave. north of Burlington St.	1950s-present
Ottawa	Hamilton Tar Products, Currie Products	170 Lees Ave.	1922-1948
Sault Ste. Marie	Dominion Tar & Chemical, Domtar Chemicals	South of Baseline (Wilde Ave.) and Dryden	1911-present
Thunder Bay (Port Arthur)	Northern Tar & Chemical, Northern Wood Preservers	2nd Ave. & Water Front S. (Maureen St.)	1938-present
Toronto	Barrett Co.	675 Lakeshore Blvd. E.	1922-1960s
Toronto	Dominion Tar & Chemicals/Domtar Chemicals	801 Lakeshore blvd. E.	1925-1974
Toronto	J.D. Paterson Co./Barrett Co.	5-33 Hahn Place	1900-1922
Toronto	Imperial Varnish and Colour	North side Lakeshore Blvd. E. between Logan and Morse Sts.	1900-1960
Windsor	Ford Motor Co.	Between Riverside Dr. E. and Wyandotte, west of Belle Isle	1923-1950s
CREOSOTING PLANTS			
Sioux Lookout	Canada Creosoting Co., Calder Creosoting Co.	1.6 km east of First Ave.	1928-1960
Sudbury	Canada Creosoting Co., Domtar Chemicals	South side Lorne St. between Sutherland & Bulmer Sts.	1925-1964
Thunder Bay (Fort William)	Canada Creosoting Co., Dominion Tar & Chemical	North of Carpenter St. east of 105th St. on McKellar Is.	1940-1946

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[64] Ontario Ministry of the Environment. *Inventory of Industrial Sites Producing or Using Coal Tar and Related Tars in Ontario: Volume I.* Prepared by INTERA Technologies, Ltd. PIBS# H88-013. 1988

COMMUNITY	COMPANY	ADDRESS	YEARS OF OPERATION
Trenton	Canada Creosoting Co., Domtar Chemicals	126 Marmora St.	1913-present
ROOFING FELT AND TARRED PAPER PRODUCTS MANUFACTURERS			
Brantford	Brantford Roofing Co.	22 Sydenham St.	1906-1950s
Cornwall	Domtar Construction Materials Ltd.	Northwest corner Seventh & Cumberland Sts.	1940-1968
Hamilton	Building Products Ltd./ Bird and Son Division	70 Beach Rd. at Gage	1910-1954
London	Canadian Roofings Ltd London Roofings Viceroy Manufacturing Bishop Asphalt Papers	1350 Trafalgar Rd.	1939-1957
Toronto	Paterson Manufacturing Co.	297-307 Front St. E.	1882-1899
Toronto	Toronto Asphalt Roofing Manufacturing Co.	15 Oxford Dr.	1922-1950
Windsor	ACME Roofing Co.	Southeast corner Walker and Edna Sts.	1917-1923
Windsor	Canadian Roofing Manufacturing Ltd.	Southeast corner McDougall and Shepherd Sts.	1914-1921
BY-PRODUCT CHARCOAL AND COKE OVEN PLANTS OF THE IRON AND STEEL INDUSTRY			
Hamilton	Dominion Foundries & Steel, Dofasco	North of Burlington E. between Kenilworth N. & Ottawa N.	1951-present
Hamilton	Steel Co. of Canada	Wilcox St.	1918-present
Nanticoke	Steel Co. of Canada	Regional Rd. 3 and Lake Erie	1981-present
Sault Ste. Marie	Algoma Steel Ltd.	South of Baseline & Goetz Rd.	1899-present
INDUSTRIAL MANUFACTURED GAS PLANTS			
Cambridge (Preston)	Pattinson Woollen Mill	498 Eagle St. N.	1870s-1890s
Ottawa	Dominion of Canada Fuel Testing Laboratories	552-562 Booth St.	1911-1940s
Niagara Falls	American Cyanamid Co. (Fertilizer Works)	Stone Rd. and Fouth Ave.	1916-1920
North Bay	Pintsch Compressing Co.	535 Stanley St.	1910-1956
Toronto	Pintsch Compressing Co.	Foot of Peter St. East of Spadina Avenue	1906-1960

COMMUNITY	COMPANY	ADDRESS	YEARS OF OPERATION
Windsor	Union Natural Gas Co. of Canada	Northeast corner Howard Ave. and E.C. Row North Service Rd.	1929-1950s
WOOD DISTILLATION PLANTS			
Deseronto	E.W. Rathbun, Standard Chemical Co.	Main & First St.	1890-1920s
Donald	Donald Wood Products, Standard Chemical Co.	Part Lot 6 and 7, Concession 1, Township of Dysart, Haliburton County	1908-1945
Fenelon Falls	Standard Chemical Co.	Francis St. and Cameron Lake	1903-1916
Lindsay	Canadian Industrial Alcohol Co., Ltd.	North side Eglinton Rd. near Scugog River	1930-1950
Lindsay	Hodgson Bros. Chemical Co., Ltd.	St. Paul and Deniston Sts. near Scugog River	1919-1930s
Longford Mills	Standard Chemical, Iron and Lumber Co., Standard Chemical Co.	Lot 20, Broken Frontage Rama Township	1900-1943
Parry Sound	Standard Chemical Co.	300 m north of Isabella between railway tracks	1909-1925
Sault Ste. Marie	Algoma Steel Corporation Standard Chemical, Iron & Lumber Co., Standard Chemical Co.	Near St. Mary's River, South of 3rd St.	1911-1928
South River	Standard Chemical, Iron and Lumber Co., Standard Chemical Co.	1 km east of Village on South River	1907-1967
Thornbury	Thornbury Reduction, Standard Chemical Co.	Northeast corner Mill and Bay Sts., at Georgian Bay	1916-1925
Trout Creek	Dominion Wood and Lumber Co.	Concession 1, Parcel 3498, near Hwy 11 east of railway	1920s

Appendix D:

List of Illustrated Historical Atlases of Ontario Counties:
1861-1881

LIST OF ILLUSTRATED HISTORICAL ATLASES AVAILABLE AT THE METROPOLITAN TORONTO REFERENCE LIBRARY

County	Year
Brant	1875
Bruce	1880
Carleton	1879
Elgin	1877
Frontenac, Lennox & Addington	1878
Haldimand & Norfolk	1877 & 1879
Halton	1877
Hastings & Prince Edward	1878
Huron	1879
Lanark & Renfrew	1880-1881
Leeds & Grenville	1861-1862
Lincoln & Welland	1876
Middlesex	1878
Norfolk	1877
Northumberland & Durham	1878
Ontario	1877
Oxford & Brant	1875-1876
Oxford	1876
Peel	1877
Perth	1879
Peterborough	1875
Prescott & Russell	1862-1881

County	Year
Simcoe	1881
Stormont, Dundas & Glengarry	1879
Waterloo & Wellington	1877 & 1881
Wellington	1906
Wentworth	1875
York	1878

Appendix E:

City of Toronto Historical Land Use Database: Disclaimer

Introduction

The City of Toronto, Department of Public Health, makes its historical land use inventory available to individuals who come in person to the office. Members of the public are asked to sign the following disclaimer before they are provided with information from the inventory. However, the majority of requests for information are received and answered in written form.

Given the potential for liability that could attach to municipalities and their staffs in respect of providing information about the environmental status of property within the municipality, in no circumstances should inquires related to contaminated property or waste disposal sites be dealt with by telephone. A system should be established to ensure that all staff understand the potential liability and that disclaimers are used.

It is also important for the municipality to make all persons aware that an inventory is not intended to reduce the responsibility of prospective purchasers and other potentially responsible parties from informing themselves of soil and groundwater conditions at a site.

Please note: This sample disclaimer is intended for information only and is not a substitute for legal advice. Readers should consult their solicitor when preparing a disclaimer.

Sample Disclaimer

The Corporation of the City of Toronto, in providing information from the City's Historical Land-Use Database, does so only upon the following conditions and understanding:

(1) The information has been collected by the Department of Public Health and is compiled from publicly available records. It may contain erroneous information given that such records may be flawed or imprecise. Furthermore, changes in municipal addresses over the decades may introduce error.

(2) No presentation is made with respect to the completeness of the information provided and, accordingly, no assurances are provided about the accuracy of the information. The Historical Land-Use Database in no way confirms the presence or absence of contamination or pollution of any kind. The information is provided on the assumption that no person shall rely on it without undertaking independent verification of it for any purpose whatsoever and all liability to any such person is denied.

(3) Possession of information provided by the City does not carry with it the right of publication either in whole or in part. Copyright is reserved to Corporation of the City of Toronto.

(4) The City of Toronto, the Board of Health for the City of Toronto Health Unit and their employees, servants, agents, officials or contractors take no responsibility for any actions, claims, losses, liability, judgements, demands, expenses, damages, or harm suffered by any person for any reason whatsoever including negligence in compiling or disseminating the information in the Historical Land-Use Database.

(5) Any use which a third party makes of the Historical Land-Use Database, or any reliance on or decisions to be based on it, are the responsibilities of such third parties. The Corporation of the City of Toronto and the Board of Health for the City of Toronto Health Unit and their employees, servants, agents, officials or contractors accept no responsibility

for damages, if any, suffered by any third party as a result of decisions made or actions based on the Historical Land-Use Database.